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12

ORIGINAL ARTICLES

THE USE OF CANCER RESIDUE*

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When a foreign proteid gains entrance into the human body without having first been split up into simpler chemical components, that proteid must be dissociated into less complex radicals by means of the tissue cells. Thus, if one were to drink a given amount of horse serum, the digestive ferments would split up this complex proteid into simpler chemical groups before actual entrance into the body was gained. The resulting albumoses, peptones, peptids and amido-acids, when absorbed by the lymphatic channels, are easily converted into human proteids through the action of enzymes normally present for this synthetic function. However, if the horse serum should enter the body tissues without first having passed through this process of reduction, the situation is entirely different. Here a complex foreign proteid has gained entrance into the body tissues as such. In this form it is of no nutritive value, since the body tissues have not the power to convert it to such a purpose in its present complex state, and its reduction into less complex radicals must be accom-

plished before it can be either used by, or excreted from, the body. In order to bring about this destruction, certain cells of the body must react with the foreign proteid chemically before its reduction can occur. This process is one that takes an appreciable time to perform, and one which seems to vary somewhat with the nature of the foreign proteid as well as with the tissue activity of the host. In many instances ten days or two weeks must elapse before all of the foreign proteid is removed. In accomplishing this result, nature forms a larger percentage of the specific enzyme than is needed for the removal of the amount of proteid given, so that if a second injection of the same proteid be given,—let us say three weeks after the first introduction has been made,—a certain definite amount of this new ferment is present, which is immediately available for the splitting up and removal of the foreign substance.

Since every proteid contains a toxic radical, this is a source of danger to the individual who receives the second injection, for if the amount of foreign proteid entering the body is sufficiently large,

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and if there is enough active enzyme present to liberate a fatal amount of the toxic group, the amount of poison suddenly thrown upon the host may be large enough to be fatal.

That the new enzyme formed for the removal of the foreign proteid is formed chiefly by elements in the blood stream and not through chemical reaction with the cells that the proteid first comes into contact with, is shown in two ways: First, the introduction of any foreign proteid into the body primarily causes a lessening of the number of white blood cells in the circulating stream. Second, the destruction of the foreign proteid after its second entrance into the body, when the specific enzyme for this purpose has been formed, is carried out with equal rapidity regardless of whether the second injection is made in the immediate neighborhood of the first or at a point far remote from it.

Thus it can be reasoned that the leucocytes are the essential cells in the formation of these specific ferments, although the formed ferment is in all probability present in the serum as well,—a fact that has been demonstrated with regard to cancer, through the work of the late Dr. Hodenpyl, since he ascertained that ascitic fluid from a recovered case was of benefit when injected into other individuals suffering from cancer.

Viewing the subject in this manner, it was natural to attempt to find the proof with regard to the formation of a specific ferment through the injection of the non-toxic proteid of the cancer cell, through a study of the various blood elements, particularly the leucocytes, and some interesting findings have been recorded.

Daily differential counts have been made of the leucocytes in some forty cases, and while the change in the percent-

age of the different forms of white cell has not always been marked, yet it is sufficiently uniform to be of significance.

In connection with a study of the blood changes following injections of cancer residue, it is important to compare the clinical course of each case with the blood changes found. Only in this way can reliable data be obtained. For this reason I will present a few selected cases from my series, some of whom have been much benefited by this method of treatment, and others who derived but little or no benefit.

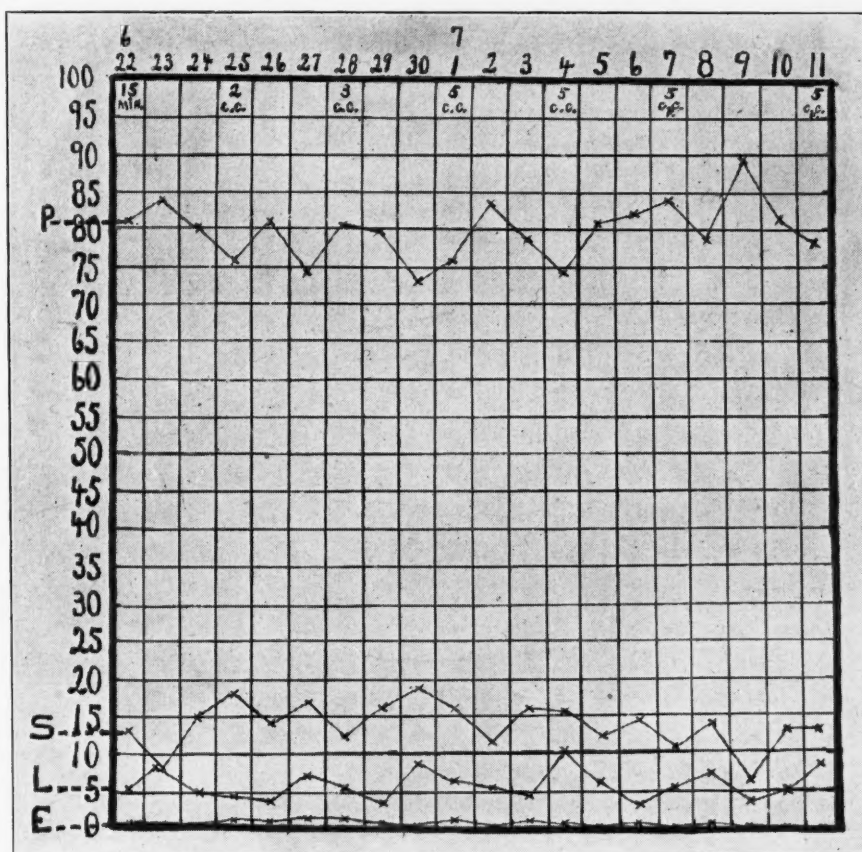
In work of this nature, after it has been established that the treatment instituted is of benefit, the questions of size and frequency of dosage are next in importance. Unfortunately these facts cannot be accurately estimated by animal experimentation alone, but must be determined by the administration of varying amounts at different periods of time to those who are the victims of some form of this disease. Thus, in order that conclusions concerning these points may be drawn from the observations recorded, I submit the following cases. Necessarily these cases all belong to the inoperable group, since no reliable conclusions could be deducted from cases which show no evidence of tumor present.

Owing to the shortness of time permitted, the number of cases that can be reported is limited, and so for the interest of this section I have chosen cases of uterine, ovarian and breast carcinoma. For the same reason I will make note only of important details in the history of each case.

CASE 24. Mrs. D., age 33. Referred by Dr. Wiggins, East St. Louis, Ill. In October, 1909, radical operation was performed for cancer of the right breast. In the latter part of May, 1910, the left eye was enucleated because of tumor growth. This also proved to be carcin-

oma. The patient was first seen by me June 22, 1910. At that time she complained of failing sight in the right eye. Several enlarged glands were present in the left axilla, and one nodule in the skin of the chest, on the right side, below the line of previous breast exision. Scars were present where small tumors had been excised from the right arm, right

breast from a case previously operated upon. For the first week the patient seemed to improve rapidly. Her appetite became good and her cough almost disappeared. However, at the end of this time improvement was less rapid, and then the malignant process seemed to grow with renewed vigor. Her sight became very poor and it was not safe



CASE 24B (CARCINOMA BREAST.)

Residue used first: two and one-half per cent Case 27A. Second, one-half per cent Case 28.

P: Polymorphonuclear leucocytes.

E: Eosinophiles.

S: Small mononuclear leucocytes.

L: Large mononuclear leucocytes.

abdomen and left arm. The clinical picture was one of general carcinoma-tosis.

The accompanying chart will show the blood changes observed and the time and amount of injections. The first injections were made with a 2% residue prepared from an adenocarcinoma of the

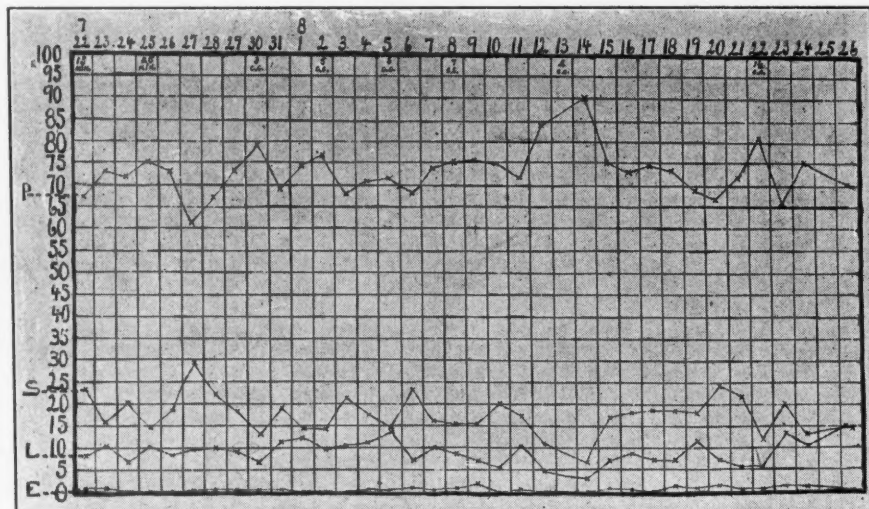
for her to be upon the streets alone. My last letter from her attending physician shows that the decline has been as rapid as her first gain.

A comparison between the clinical benefit which, outside of the first ten days, was negative, and the accompanying blood chart, will show that the two follow each

other closely. No marked blood change was noted and the patient was not benefited. In this case it will be noticed that the dosage was increased after the first small injection each succeeding time until large injections were being made. Clinically the first small injection was the only one of benefit.

CASE 31. Treated in consultation with Dr. Flinterman. Mrs. T., age 47. The patient showed clinically an advanced carcinoma of the left breast of nine months' duration. Secondary involvement of the liver was manifested by jaundice and

was complete. The progress of the disease seemed to be retarded but in nowise stopped. A glance at the accompanying blood chart shows that there was but little change in the relative percentage of the different forms of white blood cells, and that, as in the case noted above, the dosage was increased in each instance until quite large doses were being given. The erroneous supposition that if a small amount would benefit, a larger amount would benefit more, was still held by me. However, towards the end, smaller injections were given and the corresponding bet-



CASE 31B (CARCINOMA BREAST.)

Residue used: one-half per cent Case 28

P: Polymorphonuclear leucocytes.
S: Small mononuclear leucocytes.

L: Large mononuclear leucocyte;
E: Eosinophiles.

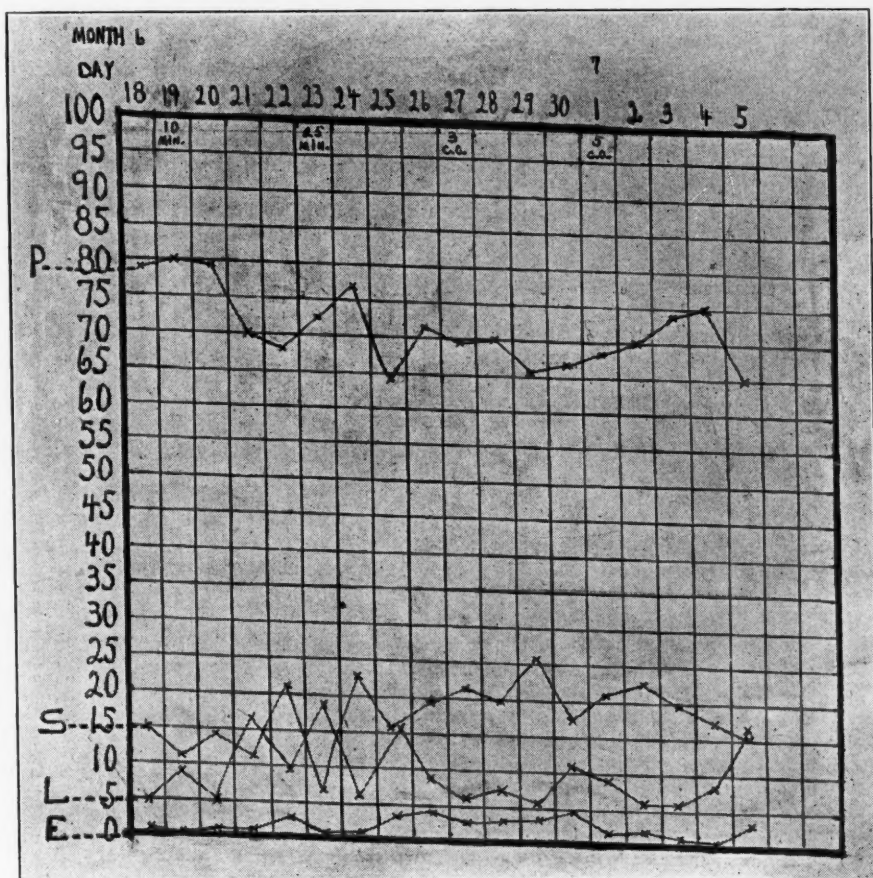
ascites. The breast had been treated with electricity and salves. This was an advanced and rapid growing tumor, and no hope of benefit was given to the patient. During the progress of treatment it was found necessary to tap the abdomen, and a portion of the fluid was withdrawn, about two gallons in amount. The amount present was so great that the withdrawal of this caused severe shock. The patient lived for fifty-four days after beginning injections, and the relief from pain, which had been severe before,

ter reaction is well shown upon the chart.

CASE 28. Mrs. F., age 55. Referred by Dr. Manton. The patient was operated upon June 16, 1910. The findings at operation were of extreme interest, inasmuch as the tumor was entirely retroperitoneal. No ovaries could be found, and the tubes seemed to run blindly, ending behind the peritoneum. The tumor tissue was composed of a large semi-solid mass which was scooped out with the operator's hands. Complete removal was absolutely out of the question. About one

quart of the tissue was removed and not quite an equal amount left. Sections of the tissue were made, and showed it to be an adenocarcinoma, which must have been of ovarian origin. The tissue obtained was split up and a residue of $\frac{1}{2}\%$ prepared. Injections of the autogenous preparation were made, as shown

diarrhoea accompanied with nausea. Her condition then became rapidly worse. Upon the 11th she complained of severe abdominal pains, the abdomen became much distended, and the percentage of polymorphonuclear cells jumped to 86. The patient's appearance suggested intestinal perforation, but her condition



CASE 28 (OVARIAN ADENOCARCINOMA.)

Residue used: One-half per cent autogenous.

P: Polymorphonuclear leucocytes.

S: Small mononuclear.

L: Large mononuclear leucocytes.

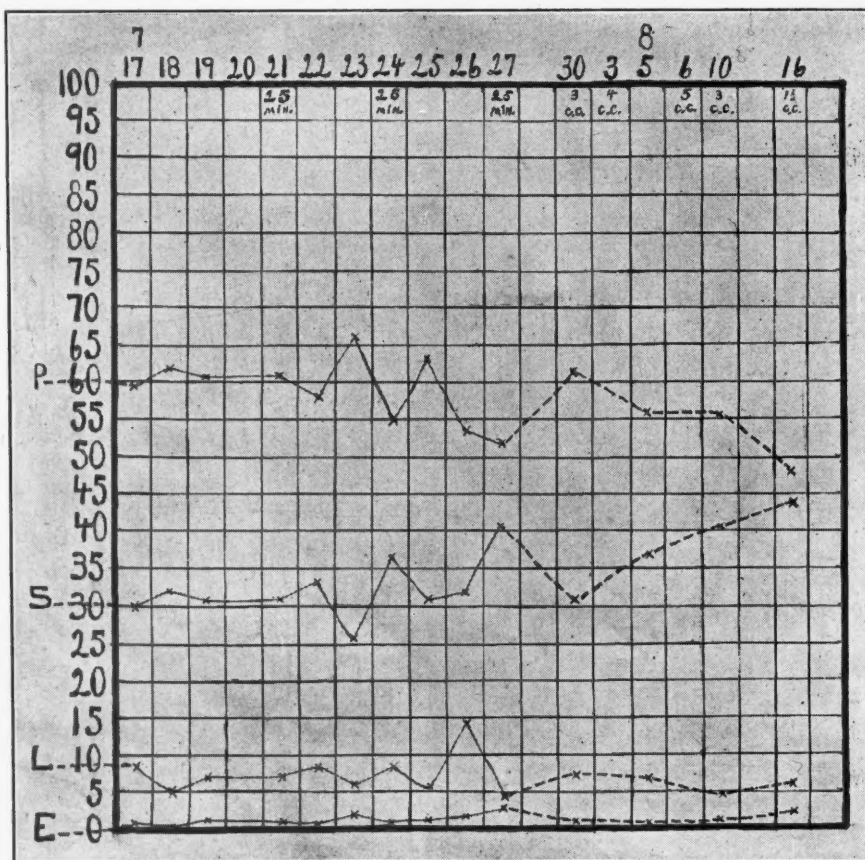
E: Eosinophiles.

by the accompanying chart. The condition of this patient was exceedingly critical for a period of three weeks following operation. At the end of that time marked improvement was shown. She was able to sit up in a chair and seemed to be gaining rapidly. August 1st the patient began to complain of constant

was such that only expectant treatment could be adopted. The patient died August 18, 1910. Permission for limited post-mortem was obtained, and it was found that the small intestine had become firmly adherent to the posterior peritoneum at the point where incision had been made to enucleate the tumor. The

intestine at this point had gradually become constricted until its lumen was entirely obliterated. This was followed by a large perforation and localized peritonitis. No secondary cancerous involvement was found, and the material left was no greater than could be scooped out with two hands. This was removed for microscopic purposes. This patient

by Dr. Manton, who had performed a radical operation for cancer of the right breast, April 19, 1910. The growth had been rapid, and sections proved it to be an adenocarcinoma. Upon July 7, 1910, a second operation was performed for the removal of a recurrent nodule in the upper third of the scar. This tissue was split up and a 1% residue



CASE 30 (CARCINOMA BREAST.)

Residue used: Autogenous, one-half per cent.

S: Small mononuclear leucocytes.

L: Large mononuclear leucocytes.

P: Polymorphonuclear leucocytes.

E: Eosinophiles.

had received relatively small injections of her autogenous residue, and seemed to be much benefited by its use up to the time that the unavoidable obstruction occurred. The obstruction itself was in no manner a malignant process.

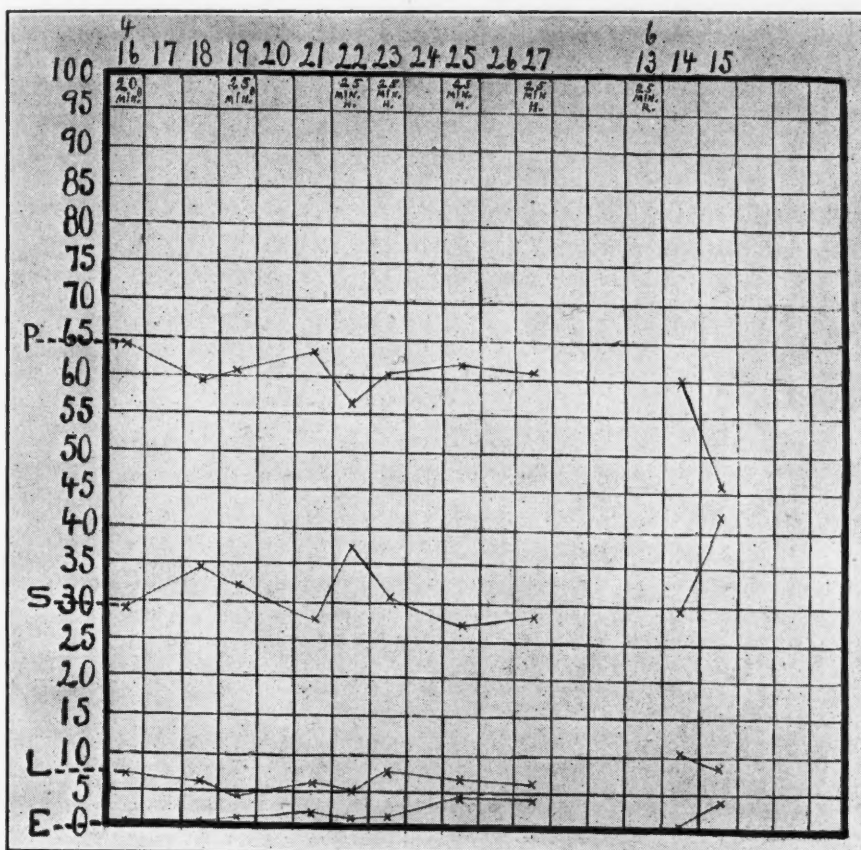
CASE 30. Mrs. H., age 45. Referred

prepared. Injections of this were given as recorded on her chart. At the end of one month the wound was entirely healed and the patient has gained eight and one half pounds in weight. The relatively high percentage of mononuclear cells following injections of the residue in this case,

accompanied by the rapid clinical betterment of the patient, should point to a favorable prognosis.

CASE 17. Mrs. K., referred by Dr. Hirschman, was operated upon four years ago because of carcinoma of the uterus. Vaginal hysterectomy with removal of both tubes and ovaries was performed.

tions of residue were used without much apparent benefit or change in proportion of white cells, as the accompanying chart shows. About the first of May she consulted a prominent Detroit surgeon, who stated that the treatment would probably be of no benefit to her. Thoroughly discouraged, she consulted



CASE 17 (CARCINOMA UTERUS.)

Residues used: First two injections, one-half per cent carcinoma of breast. Next four injections, three per cent epithelioma vulvae. Last injection, one-half per cent carcinoma rectum.

P: Polymorphonuclear leucocytes.
S: Small mononuclear leucocytes.

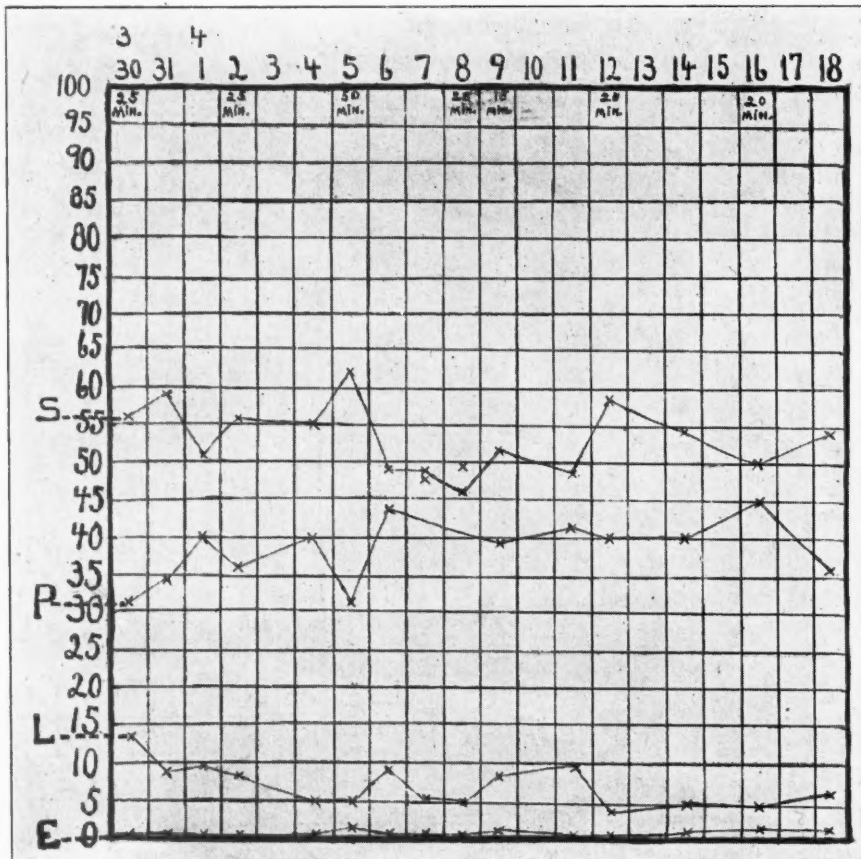
E: Eosinophiles.
L: Large mononuclear leucocytes.

She was sent to me for treatment April 16, 1910. At this time she complained of severe pains in the rectum and of a persistent bearing down pressure, as if she constantly desired to pass stool. She was unable to sleep and extremely nervous about her condition. Various prepara-

other western surgeons, who informed her that no relief could be given her. May 19th the patient reappeared for treatment. A residue recently prepared from a large lip cancer was used, and relief of pain seemed to be almost immediate. One blood count, that of June

15th, is added to the previous chart, to show that the increase in mononuclear leucocytes was an accompaniment of the improvement in clinical symptoms. The hard, infiltrated mass that was formerly felt by the examining finger in the rectum has disappeared, only a soft, boggy resistance being noticed. The patient has

was used for severe hemorrhage from the ulcerated cervix. The patient had been in bed for six weeks. She had had repeated hemorrhages, almost daily, which were controlled by packing. Examination showed a rather soft, tender mass, half the size of a child's head, which was absolutely immovable. The



CASE 12 (CARCINOMA UTERI.)

Residue used: one-half per cent adenocarcinoma of breast.

S: Small mononuclear leucocytes.

P: Polymorphonuclear leucocytes.

L: Large mononuclear leucocytes.

E: Eosinophiles.

gained over ten pounds, and states that her night's rest is unbroken and that her appetite was never better.

CASE 12. Mrs. S., age 47. Referred by Dr. Hoffman. Was first seen by me March 30, 1910. Curettings made two years previous had shown signs of malignancy. One year later the actual cautery

cervix was represented by a thin shell, which was ulcerated in its entire circumference. The examining finger could be inserted to full length in the ulcerated cavity. Examination caused severe hemorrhage, which was controlled by packing. The blood findings in this case were unique, as is shown by the accompany-

ing chart. The exceedingly high percentage of mononuclear cells showed, in my opinion, a considerable degree of resistance to the progress of the disease, in spite of the fact that the patient was in such an extreme condition. In this case small injections of a $\frac{1}{2}\%$ breast adenocarcinoma residue were given. Improvement was rapid and marked. But one severe hemorrhage occurred after the first injection, and she has been free from any recurrence since. At the present writing the patient goes to dances, makes frequent trips out of the city, and states that her health is as good as it ever was. She has gained thirty pounds in weight during the past four months.

From a study of the cases cited, and their blood findings, certain definite conclusions can be drawn. Especially is this true since the clinical course of the disease seems to progress either favorably or unfavorably in direct ratio to the changes in percentage of the white blood cells that injections of cancer residue produce. Thus, if the percentage of mononuclear cells increases markedly following a residue injection, a more favorable prognosis can be given than if no such reaction is obtained.

Next, small injections are more beneficial than larger doses. The explanation of this, I believe, is as follows: If a large injection of complex proteid be given, it takes a much longer time for the body to split this up and dispose of it than of the smaller amount; consequently a larger proportion of the specific ferment formed is used for the removal of the dead proteid injected, than for the destruction of the living cancer cells. Thus, after the first formation of the specific enzyme, if but a few drops of the residue solution have been given, there are more specially sensitized leuco-

cytes present to attack the cancer cells of the patient. This brings us to the next consideration of when to give a second injection. The splitting up of the cancer cells will, in all probability, form more of the specific ferment, and, if a second injection be given too early, it would appear that so doing would be detrimental rather than beneficial, since the ferment present would simply be used for the removal of the proteid injected. If this reasoning is correct, we may assume that the second injection should be given only after the active ferment produced by the introduction of the first, and the following destruction of cancer cells has been completely exhausted, or at least is present in sufficiently small amount so that the introduction of the second dose will cause the formation of a larger amount of enzyme than is made use of in its destruction. Just how to ascertain the correct time when this period is present it is impossible to state, but at present it is my practice to repeat the injection when the percentage of polymorphonuclear cells shows a decided increase.

It is customary for the surgeon to divide cancer cases into two classes, according to whether it is possible to remove all cancer tissue or not. In the latter instance the case is called inoperable, and in the former operable. How often a truly operable case is seen can only be surmised, for when we stop to consider that over 60% of these operable cases succumb, either from local recurrence or from metastasis in some vital portion of the anatomy within the limit of five years, we are forced to admit that operation *per se* does not effect a cure. A more correct division would be, first, that of inoperable cancer, and second, apparently operable cancer. The inoperable case is first, one in which

it is manifestly impossible to remove all macroscopic cancer from the patient without injury to some vital organ; or second, one in which the deformity caused by operative measures could not be remedied; or lastly, a case in which the primary growth might be easily removed, but which shows definite symptoms of secondary involvement in some other portion of the body. The "apparently operable cases" are those in which the macroscopical evidence leads the operator to believe that all cancer cells can be removed. Were macroscopical evidence sufficient, such a division would be correct, but unfortunately such is not the case. Frequently operations are performed for the removal of the primary cancer and its associated glands which do not take into consideration the microscopical lymph channels connecting these structures, which in themselves must be plugged with numerous active cancer cells. As an example may be mentioned the excision of an epithelioma of the lip by the "V" method and a small incision below for the removal of the glands. In such cases we should really expect a local recurrence, and the fact that many of these cases do not recur locally must be taken as a sign that the body itself disposes of the relatively few cancer cells left. Next, it is absolutely impossible to ascertain by any known diagnostic means whether a small cancer nodule is present in the liver or lungs of any given case. A secondary growth must attain considerable size before diagnostic evidence is present and while metastasis is more apt to occur from a large growth, yet it not infrequently is noted in the early months of the disease, a fact that signifies that secondary involvement must have occurred very soon after primary growth began. From these facts it can easily be seen that many

cases in which, to the examining eye, it appears that all cancer cells can be removed, are in reality inoperable cases, and evidence of this truth is only too frequently shown shortly after operative treatment has been applied.

Such cases, however, are the ideal ones in which to apply the use of cancer residue, since the number of cancer cells remaining in the host after removal of the tumor is sufficiently small so that their total destruction should be assured. During four and one-half years of trial there has not been a known recurrence in cases belonging to this group. With inoperable cancer, to which group all cases reported here belong, the amount of cancer tissue may be so large that a too rapid splitting up of the malignant cells may be a menace to the patient. I have had several cases which, after prolonged treatment and large injections, have shown gastro-intestinal disturbances such as diarrhoea and vomiting, together with rapid pulse rate and slightly sub-normal temperature. However, since a study of the above cases and others shows that large doses do not cause the tumor cells to disappear with the rapidity that small injections do, I am more prone to attribute these untoward symptoms to the size of the injection. Nevertheless, since every proteid contains a toxic group, it can easily be imagined that too rapid destruction of a large amount of cancer tissue would be of danger to the patient. For this reason, in many instances I have removed as much malignant tissue as possible before beginning residue treatment. In every case that this has been done, the skin incision has healed by primary union, regardless of whether cancer tissue was macroscopically left or not; consequently I can see no logical reason why such a procedure should not be adopted.

In conclusion I wish to impress the following facts:

1. The injections should always be small in amount, preferably 5 to 10 minims of a $\frac{1}{2}$ to 1% solution.

2. Injections, according to present knowledge, should be controlled by daily differential leucocyte counts.

3. Injections should only be made when the percentage of mononuclear cells is on the decrease.

4. A good blood reaction, by which I mean an increase of from 10% up of mononuclear cells following residue injection, tends towards a favorable prognosis.

5. If the blood count does not respond, smaller doses should first be tried. If this fails to produce the desired change, different residues should be used until one is found which brings about this result.

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DISCUSSION

DR. LOUIS J. HIRSCHMAN, Detroit.—If Dr. Vaughan has done nothing else with this work of his, which I consider is going to be monumental, he has accomplished the relief of pain. In these inoperable cases, even where the condition is not improved, his residue has undoubtedly acted as a marvelous anodyne, saved patients from becoming drug fiends, and relieved the pain with which cancer patients are cursed. He has accomplished this in several cases of rectal cancer, which I have referred to him for treatment.

Another thing is his prophylactic use of this residue by administering post-operative injections without waiting for signs of recurrence. I wish to personally congratulate not so much Dr. Vaughan as this Section in having such a paper read before it.

DR. JOSEPH SILL, Detroit.—It has so happened that I have had much opportunity of observing Dr. Vaughan's work, and I want to congratulate him on what he has accomplished. I am not a clinician; I have been doing laboratory work purely for the last ten years, therefore of the clinical aspects I cannot speak from personal experience. But the theoretical side of it is extremely interesting to me. A large number of Dr. Vaughan's blood counts have been made in my laboratory at Harper Hospital, and the changes have been very interesting to watch.

One point that is of interest to me, but which Dr. Vaughan did not bring out, as it is outside the scope of his paper, is the reason for administering this residue. We do it for exactly the same purpose as when we give a vaccine for an acute bacterial infection. We are introducing a foreign product into the body in the one case as in the other for the purpose of enabling the body to produce substances which will destroy the cancer cell in the one case and the invading bacterial cell in the other.

The principle of the two is, I believe, exactly the same. Dr. Vaughan's work is of great value, and has certainly been of extreme interest to me.

DR. VAUGHAN (closing the discussion).—I want it distinctly understood that at present I do not claim in any way that the use of this residue is a cure for cancer. I do not want that mistaken impression to go out, as it evidently did when some of my former papers on this subject were published. I am sure we have something that will benefit cancer. It relieves the pain, and some patients seem to improve greatly. We have first to learn how to use it, and then find if it does any permanent good. To do this will require at least five years, since a patient must be alive and well from five to ten years after treatment before we can claim to have done anything in the line of a cure.

A GENERAL CONSIDERATION OF THE SUBJECT OF PELVIC INFECTIONS, BASED UPON THE STUDY OF ONE HUNDRED CONSECUTIVE OPERATIONS*

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The knowledge possessed by many physicians concerning pelvic infections is in a somewhat chaotic condition. This is the natural result of the usual teaching of the text-books which lay so much stress upon the different pathologic lesions and which describe endometritis, salpingitis, pyosalpinx, tubo-ovarian abscess, pelvic peritonitis, etc., so minutely that the student loses sight of the subject in its broader aspects and naturally finds himself attempting to diagnosticate and treat a particular lesion, instead of aiding nature to take care of an infection which has invaded the pelvis.

The term pelvic infection is a broad one, yet it refers to a class of cases presenting a fairly definite clinical entity. A similar term, equally broad in its application, is pelvic inflammatory disease. The first, however, is the proper term, for at the present time we look upon inflammation, not as a disease, but as a reparative and curative process. The infection is the real disease, the inflammation being but the reaction of the tissues to the invasion of the infection. Moreover, it must be looked upon as a desirable reaction. Given an infection, unless we can combat it early and directly by opsonic or other treatment, we are glad to see a well-marked inflammation result, for we know that of two cases in which the virulence and the amount of infection are the same, the one presenting the great-

est amount of inflammation and the grossest lesions resulting therefrom is the one in which the prognosis is the better.

In attempting to present some of the general considerations of the subject, I have used for statistical study a tabulation of my last one hundred consecutive operations done for infection, together with a number of case-histories of non-operated cases selected to illustrate a particular phase of the topic.

The subject of infection of the internal pelvic organs is the most important as well as the most difficult one in gynecology. It is the most important, because of the very frequency of the cases. Fully forty per cent. of the patients who are seen by the gynecologist, as well as a large proportion of the gynecologic patients treated by the family physician, suffer from active infection or from the results of infection. Moreover, the impairment of health is often extreme and the effects of improper treatment are frequently grave. It is the most difficult subject in gynecology, because there is none requiring for proper treatment a greater experience or better judgment on the part of both physician and surgeon. In cases of displacement, of fibroids, of ovarian tumor and of cancer, the treatment is along well-established and scientifically proven lines. Such is not the case, however, in infections. There are well-established principles of treatment, yet the application of them to an individual case is often beset with the greatest diffi-

*Part of a symposium upon Inflammatory Diseases of the Pelvis, read at the Forty-fifth Annual Meeting of the Michigan State Medical Society, Bay City, September 28, 29, 1910.

culties. One circumstance which contributes to this difficulty is the low average age of the patients. The average in my series of one hundred operated cases was twenty-nine, and as a large proportion of the patients not operated upon were young women, the average of all my cases would be considerably less than this figure. Of these one hundred patients, forty were twenty-five years of age or under. This low age average makes the question of when to be radical and when to be conservative a difficult one to decide. An unnecessarily radical operation is often more to be deplored than a timid conservatism, yet an unwarranted mortality may follow the failure to resort to operation when clearly indicated. Had we not practically always to consider the preservation of most important organs, the treatment would be much simplified.

As before stated, in most text-books the subject of pelvic infection is divided and considered under numerous captions, such as salpingitis, pyosalpinx, oöphoritis, etc. This is done in order to emphasize the predominant lesion, yet one must never lose sight of the fact that although one organ, such as the tube, is often the principal seat of the infection, rare indeed is the case in which the neighboring structures escape. The symptoms of infection of any or all the internal organs, especially in the acute stage, are very similar. Moreover, the examination often reveals no more than a thickening of the tissues, with immobility of the organs and tenderness on pressure. It is well, therefore, to consider infection as an entity, differentiating and refining the diagnosis whenever possible.

The proportion of the various lesions encountered at the operating table are, I think, fairly represented in my series of one hundred cases. There were thirty-

one of adherent appendages, or perisalpingo-oöphoritis, nineteen of pyosalpinx, fourteen of tubo-ovarian abscess, three of combined tubo-ovarian abscess and pyosalpinx, fourteen of pelvic abscess, eight of salpingitis, six of pelvic peritonitis, five of hydrosalpinx. In fifty instances, or exactly one-half of the cases, pus was encountered. These figures represent only the predominant features of the respective cases. In nearly all there were additional and associated lesions. A certain amount of pelvic peritonitis existed, of course, in all. Small myomata were present in nine instances, old extra-uterine pregnancy, proven by microscopical examination, in two instances, and inflammation of the appendix in twelve cases. Appendicitis may also have existed in some of the seventeen cases which were treated by vaginal incision and drainage.

Etiology.—It is possible to classify pelvic infections in various ways. Perhaps the most satisfactory, from a scientific standpoint, is the bacteriologic, but this is not altogether practical. Certain difficulties beset the bacteriologic study. In non-operative cases, one is not always sure that the culture obtained is uncontaminated, while in many of the operative cases the cultures remain sterile, either because the organisms have died out or more frequently because suitable media and suitable methods are not employed. The most frequent organisms, as we shall see, are the gonococcus and the tubercle bacillus, neither of which grow on the media usually at hand. In addition, some cases of infection are due to anaerobes, and growth does not appear in the culture tubes as usually incubated. Moreover, secondary infection, especially from the intestine, often obscures the primary etiologic agent. On account of these uncertainties, bacteriologic study gives disappointing results.

It is, however, of interest to know the comparative frequency of the various bacteria. Among the many studies of the subject is that of Menge, who found micro-organisms in 47 of 122 cases of salpingitis. Of these forty-seven cases, there were forty-four pure and three mixed cultures. In twenty-eight instances, the gonococcus was found alone and in nine the tubercle bacillus alone. In Andrew's statistics, tuberculosis is not included. Of 684 cases collected from various sources, his findings are: Sterile, 55 per cent.; gonococcus, 22.5 per cent.; streptococcus and staphylococcus, 12 per cent.; colon, 2.5 per cent.; pneumococcus, 2 per cent.; saprophytes, 6 per cent.

I regret to say that cultures were made only in forty-two of my cases. Twenty-six of these were sterile, and in sixteen there was a growth on the media, the colon bacillus appearing seven times, streptococcus seven times, staphylococcus once, and an unidentified bacillus once. These observations are too few in number to be of value. Undoubtedly a very large percentage of the cases in which the cultures were sterile were due to the gonococcus, so that it is evident that this organism plays the most important rôle in the etiology of pelvic infections. Next in frequency is the tubercle bacillus. This is a fact which is not generally recognized. I make this statement because I find in consultation work that tuberculosis is rarely considered by the practitioner in making a diagnosis of pelvic inflammation.

Even though the bacteriologic study is at times unsatisfactory, it should always be made when possible, for an absolute knowledge of the organism present will frequently greatly aid in the method of treatment.

The importance, also, of a most careful history, especially as to the mode of onset, cannot be overestimated. If, in taking up a case of pelvic infection, the following

points are always kept in mind, a fairly correct diagnosis of the variety of the infection can be made.

1. Do the symptoms date from a confinement or a miscarriage?

2. If non-puerperal, what are the probabilities of gonorrhea? Here caution is required, but there are usually suspicious circumstances pointing to its possibility. In the acute or subacute stages, there is generally sufficient discharge from the cervical glands or from Skene's ducts in the urethra, to serve for microscopic examination, but if not, the early symptoms of gonorrhea are sufficiently characteristic, as a rule, to point to the disease.

3. If both puerperal and gonorrheal infection are excluded, the case is one either of tuberculosis or one of the rarer cases of infection secondary to some other pathologic condition. A skin test for tuberculosis should then be made.

From a practical viewpoint, therefore, it is well to classify these cases into four clinical groups, in the order of their frequency: (1) gonorrheal, (2) puerperal, (3) tuberculous, (4) a miscellaneous group which may be subdivided into a number of smaller groups.

There are of course certain symptoms and certain conditions found on examination, which, while not pathognomonic, are yet of importance in the differentiation of the variety of infection. My point is that, if instead of putting the emphasis on the exact lesion, the attention is fixed upon the question of whether the infection is from the gonococcus or from the streptococcus (as is likely in puerperal infection), or from the tubercle bacillus, the treatment can be more rationally carried out.

The proportion of cases belonging in the gonorrheal group will vary greatly according to the class of patients seen. While the disease occurs in every walk of life, it will undoubtedly be more frequently encoun-

tered among dispensary patients than in private practice. In my tabulation of one hundred cases, forty-three are put down in this group. If I included my non-operative cases, the percentage would be as high as sixty, for it is now my practice not to operate on gonorrheal pus tubes until every non-operative measure has been exhausted and the persisting symptoms demand relief.

In the second group of cases, that of puerperal infections, I have included all cases, regardless of the variety of organism, in which the symptoms have followed a confinement or miscarriage. There are twenty-one of these cases, thirteen following confinement and eight following miscarriage. In three of the latter there had been a criminal abortion, and it was suspected, but not proven, in a fourth case.

There were fourteen instances of tuberculosis, or fourteen per cent. A point which should be emphasized is that tuberculosis of the tubes cannot with certainty be diagnosed nor excluded except by a histologic examination. Many cases, of course, can be positively differentiated at the operating table. These are the cases in which the peritoneal covering of a thickened tube is studded with tubercles. Other cases of twisted, thickened and hardened tubes may appear suspicious. In another variety, the diagnosis can only be made by finding microscopic tubercles with typical giant cells. I once compared the diagnosis as made at the operating table with that made in the laboratory of eighty cases of tubal inflammation. Twenty-nine per cent. of the cases of tuberculosis were not suspected until the microscopic examination was made, whereas in twenty per cent. of the cases in which the clinical diagnosis was tuberculosis, the microscope proved such diagnosis in error. There is, then, an error of about twenty-five per cent. in

the operating table diagnosis of these cases. This variety of infection should always be thought of, for it is more frequent than usually considered.

In the miscellaneous group are to be found the cases, especially of adherent appendages, the cause of which cannot be readily ascertained. Two of my cases were infected extra-uterine pregnancies, nine were associated with small fibroids, and one with a small ovarian cyst. Dermoid cysts of the ovary are particularly prone to become infected, and lead to extensive pelvic inflammation. In a small number of cases the primary infection may be in the appendix, but such instances are far more rare than a primary infection in the tube and secondary involvement of the appendix. As before stated, the appendix was involved in twelve of my cases. In only one was it probable that the infection originated in that organ.

General Considerations Concerning Treatment.—The question of the treatment of pelvic infection has probably caused more discussion and brought out greater differences of opinion than any other subject in gynecology. There are no hard and fast rules. There are only general principles to guide one, and he who has the best understanding of the differences in the virulence of the bacteria concerned and the resistance of the infected organs to these bacteria, will be the most successful in his treatment. For this reason, it is important to divide the cases into the groups I have mentioned, for even the chronic case resulting from puerperal infection must be approached surgically with far greater circumspection than the one resulting from gonorrhea. A streptococcic infection is rarely to be treated surgically, a gonorrheal more frequently, and a tuberculous practically always.

Anything like a full discussion of the subject, my time forbids. In giving an out-

line of the treatment, it is to be understood that there are numerous exceptions to the following points:

Gonorrheal Infections.—Vigorous treatment of an acute gonorrhea in women would greatly lessen the number of cases of infection of the internal organs. Unfortunately, unless the attack is a severe one, many women do not consult the physician until too late to prevent extension. Unfortunately, too, they are not given the attention they deserve when they do appear. The method of procedure to be followed is admirably set forth by Bierhoff.* When the tubes become infected the utmost conservatism should prevail. Rest in bed, the constant application of the ice-bag, a daily cleansing douche of saline, the administration of diuretics and of urotropin, constitute the proper treatment. Even if pyosalpinx results, refrain from operating, for frequently large pus tubes in six months' time cannot be palpated. If a pelvic abscess results, it should be opened and drained through the vagina. Except for intestinal obstruction, which is rare, the abdomen should never be opened, although it can be done with impunity. Thousands of organs have been sacrificed needlessly by removal in the acute and subacute stages of gonorrheal pyosalpinx. If the disease become chronic, with occasional exacerbations, then a radical operation should be done. Removing the tubes alone seldom gives the expected relief, although occasionally the results are excellent.

Puerperal Infections.—The infections in this group are of two varieties. The first, or putrid type, results from retained material in the uterine cavity, and when this is removed the symptoms usually promptly subside. The serious type is practically always due to the streptococcus. When

one considers the observations of Bumm, to the effect that this organism makes its way through the uterine tissues at great rapidity (as rapidly as an inch in six hours), the futility of a curettage is evident. One may understand from this fact also why hysterectomy in the acute stage has not met with the success predicted by its advocates. Antistreptococcus serum is useless. We hope for good results from opsonic treatment. My experience with it is limited to three cases; the three patients recovered, and one, I think, would have died without the treatment. An autogenous vaccine should be used, if possible; if not, a stock vaccine can be obtained anywhere in Michigan within twenty-four hours, and should be used. The liberal use of ice-caps over the abdomen and saline by the drop method are most important therapeutic measures. Abscesses, collections of serous fluid and indurated parametric masses should be opened through the vagina or occasionally above Poupart's ligament, and packed with gauze. Some surgeons advocate the opening of the cul-de-sac through the vagina in every case. I see no great objection to this, as it relieves any possible tension, and may thus prevent, to some extent, absorption. Abdominal surgery plays no rôle in these cases, until they become chronic. Even after the lapse of months, live streptococci may be present, and if released from the walls of inflammatory tissue within which nature has imprisoned them they may cause a fatal peritonitis. I lost one such case two years after the confinement at which the original infection occurred. Cultures from the few drops of pus within a much thickened tube showed streptococci. The patient developed a severe peritonitis within twenty-four hours, and died on the third day.

Tuberculosis.—A tuberculous infection is usually insidious in its onset and rarely seen or recognized in an acute stage. Mayo

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has stated that in sixty-five to seventy-five per cent. of the cases of peritoneal tuberculosis in women the infection is primary in the tubes, and that if these foci are removed the results are excellent. Twelve of my fourteen patients in this group are known to be living; two I have lost track of.

The cases of tuberculosis should always be operated upon, either the tubes alone being resected or all the organs removed, according to the circumstances.

Of these one hundred operated cases,

thirty-one were acute or subacute, and sixty-nine chronic. Hysterectomy was done in thirty-seven; some conservative abdominal operation in forty-one; puncture through the vagina in seventeen, and incision and drainage above Poupart's ligament in five instances. There were two deaths. One of the fatal cases has been mentioned, and the other was a streptococcic pelvic abscess which was drained through the vagina.

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THE VALUE OF VAGINAL INCISION IN ACUTE PELVIC INFECTIONS*

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Necessarily in a fifteen-minute paper my part in the discussion of this most important subject must be strictly limited. Therefore, I shall confine my remarks to cases where the inflammatory process has resulted in the formation of pus in some portion of the pelvis. While rarely, usually in puerperal cases, there may be abscess formation in the walls of the uterus, in the true pelvic tissue, or in pockets enclosed by peritoneum, in the vast majority of cases the purulent collection is within the walls of the tubes. In a certain percentage of cases the ovaries become infected and the seat of true abscess formation. Such ovarian abscesses, much less common than pyosalpinx, may exist alone, or, what is far more common, may be joined to the tubes, forming a tubo-ovarian abscess.

Whatever may be the bacteriologic cause of the inflammation, whether due to the streptococcus, staphylococcus, gonococcus

or tubercle bacillus, the resulting reaction is the same in character, though not always the same in degree. No matter how much pus may be produced within the tube, the latter is almost invariably shut off from the surrounding peritoneum by plastic lymph thrown out as a result of the action of the bacteria upon the surrounding tissues. The more intense and virulent the inflammation, the greater the deposit of lymph. Cases then will vary in intensity from those where the fimbriated extremity of the tube is merely closed, while its walls are only slightly adherent to the surrounding peritoneum, to those cases where so much lymph has been thrown out that the entire pelvis is like a plaster-of-Paris cast. In the latter case the indurated mass is made up of inflamed tubes, ovaries, uterus, intestines and omentum, the induration at times reaching upward nearly to the umbilicus.

The position of the tubal abscess will depend somewhat upon the position of the uterus at the onset of the inflammatory pro-

*Part of a symposium upon Inflammatory Diseases of the Pelvis, read at the Forty-fifth Annual Meeting of the Michigan State Medical Society, Bay City, September 28, 29, 1910

cess. If it be retroverted with appendages resting upon the floor of the pelvis, it will be anchored there by the surrounding lymph. If the position of the uterus and appendages be normal at the beginning of the inflammatory attack, there is a natural tendency for the heavy inflamed tube to sink downward, roll up in the broad ligament, and rest upon the pelvic floor. Rarely the tube is anchored high up in the pelvis, with intestinal coils below and nearer the vaginal wall than is the abscess sac.

The clinical course of purulent collections within the tubes and ovaries where no treatment has been instituted varies according to the amount of the pus, its location, and the amount of accompanying inflammation. Just as in other parts of the body, purulent collections within the pelvis seek paths of least resistance. Most commonly the pus will escape through the adherent vaginal wall, high up in the vaginal fornix behind the cervix. Again it will pass out through an opening in the rectum, bladder, or rarely will rupture through the abdominal wall. Only exceptionally does the abscess rupture into the abdominal cavity and give rise to general peritonitis.

But the spontaneous rupture of a pus tube in any of the ways outlined above does not necessarily mean emptying of the pus sac and cure. Nature is a good conservative surgeon up to a certain point. The general peritoneal cavity is usually quite well guarded by the inflammatory deposit of lymph. Nature, however, is far from being a modern surgeon, in that the opening through which the pus escapes is very apt to be minute, closing up quickly after a certain amount of the purulent collection has passed through. It may not be at the most dependent portion of the abscess cavity, so that very poor drainage is established. There may be more than one pocket to the pus tube, and these different loculi may be

entirely separated from one another. Thus one pocket may be drained while the septic process is continued by the retention of pus within another pocket.

The above rather elementary review of the pathology of purulent pelvic collections has seemed necessary for a proper understanding of the treatment of the condition. For in the past many lives have been sacrificed by treatment which, on the one hand, was not radical enough, or, on the other, was far too radical. I am convinced that even now, with the experience which has been accumulating for twenty years, this important subject is not understood in all its aspects, with the result that the patient often is more harmed than benefited by treatment.

Thirty years ago purulent collections within the pelvis were treated with incorrect ideas of the pathology of pelvic inflammation. Not the tubes nor the ovaries were thought to be the seat of the purulent process, but the pelvic cellular tissue was considered to be at fault. The induration around the infected appendages, due to plastic lymph, was supposed to be an acute inflammation of the cellular tissue, which finally broke down and formed an abscess. Such abscesses were attacked gingerly through the posterior cul-de-sac. An aspirating needle was thrust up behind the cervix, as much pus as possible withdrawn, the opening carefully dilated, and a small drainage tube inserted a short distance. As a hospital interne, twenty odd years ago, it fell to my lot to wash out such pus cavities through the drainage tubes. Some patients, where there was one large pus sac and where the opening had been made low down, recovered fairly quickly. The majority, however, were weeks in the hospital, ran a septic temperature, and were not cured when they were discharged.

In the late eighties came the laparoto-

mists, inspired by the teachings of Lawson Tait and his pupils. They recognized the true pathology of purulent collections within the pelvis, claiming that the only scientific method of treatment was to clean out the pelvis by ablating the diseased appendages. Such treatment was a great step in advance. It was founded upon a correct conception of pelvic pathology. It shortened up the period of convalescence, for when it did cure, it cured rapidly. Again, twenty years ago such radical treatment of acute pelvic infections was almost necessary, in order that the greatest good could result to the greatest number. For it was absolutely necessary that the abdominal surgeon should pass through this evolutionary period, in order to acquire a thorough experience and knowledge of pelvic conditions.

Thoughtful surgeons, however, soon found that the abdominal excision of pelvic pus sacs was not the ideal procedure it was first thought to be. Not taking into consideration the accidents incident to such work, such as suppuration of the abdominal incision, with subsequent fistulæ, at times connected with the bowel, persistent intestinal adhesions, et cetera, the primary mortality of such operations was high. This was the more surprising since it was taught that the pus from a pyosalpinx was sterile and would not give rise to general peritonitis. The primary mortality of abdominal excision of pus tubes at all stages of the infections was at least ten or fifteen per cent. Death usually resulted from either general peritonitis, or shock, or both. As a result of careful routine bacteriologic examination of the contents of the tubal abscesses it was found that, while true that such pus was usually sterile, it was not uncommon for a mixed infection to exist. This mixture of the gonococcal with streptococcal infective organisms accounted for the cases of rapidly

fatal general suppurative peritonitis which only too frequently followed radical excision of pus tubes by the abdominal route. Such accidents occasionally followed, even when the disease was treated in its subacute or chronic stages, where apparently every opportunity had been given the pus to become sterile.

Again, many patients with pelvic inflammatory disease were in poor physical condition to withstand an abdominal operation, on account of degenerative changes in the heart muscle and in the kidneys resulting from septic absorption. Thus a certain percentage of these pus patients died from shock, or shock and peritonitis combined.

In order to overcome the dangers just described, and especially to avoid the shock of an abdominal operation, enucleation of the uterus and pus sacs was attempted from below by the French school of surgeons. However, the accidents resulting from this disadvantageous route for the radical treatment of purulent collections within the pelvis led to the gradual abandonment of the method. Injuries to bladder, ureters and intestines were too frequent and too unavoidable by this method to make for it a permanent place in the surgery of purulent pelvic collections. However, it did show the quick subsidence of symptoms when dependent drainage was established, and paved the way for the safest and most rational method of treating pus tubes, viz., their evacuation by vaginal incision.

The technic of the modern vaginal section for pus in the pelvis is simple in the extreme, but is equally effective. With the patient in the lithotomy position, with buttocks well drawn down over the table, and the posterior vaginal wall depressed, the posterior cervical lip is drawn sharply upward with a volsellum forceps, thus rendering the posterior vaginal wall tense. The mucosa of the latter is cut through

transversely for about two inches. The index finger is then forced upward, care being taken to stick close to the posterior wall of the uterus so as to avoid the rectum. The operator in most cases is able to outline the pus pockets and open them with the finger without the aid of instruments. Occasionally, when the adhesions are particularly tough, it may be necessary to pass the sharp pointed scissors upward along the finger as a guide. The pus sacs at either side of the uterus should be opened thoroughly, the openings being made as large as is found compatible with the conditions present. Usually the peritoneal cavity is not opened in this simple operation. If it is, the danger of peritoneal infection is reduced to a minimum, since only a small portion of the pelvic peritoneum is contaminated, and dependent drainage is at once established.

It is best not to irrigate the cavity after the evacuation of the pus, for fear of carrying the infection upward. Nor is it necessary. Good results can be obtained by packing the cavity lightly with gauze, the end of the strand leading out into the vagina.

The entire operation need not take more than ten or fifteen minutes. Even the weakest patients are not shocked except from the anesthetic. The gauze is allowed to remain for a number of days, or until the odor becomes offensive. It is then removed at once, or in two successive days, a small strand of gauze being reinserted in order to prevent closure of the mucosal incision. If necessary the cavity can be irrigated daily until it collapses.

It is surprising how few patients after this simple operation will be obliged to re-

turn for further treatment. Examination months after the operation often fails to reveal any sign of previous inflammation. In a certain proportion of cases, patients may afterward require the radical abdominal operation in order to be restored to health, but these operations are more like the interval operations for appendicitis and should be free from mortality.

In order to fortify my statements regarding the two methods of treating pus in the pelvis, I have looked up the records of 144 cases of pus in the pelvis treated in the gynecologic clinic of the University Hospital during the past nine years.

The following is a summary of these cases:

Number of cases of pus in the pelvis.	144
Abdominal sections (primary).....	80
Deaths after primary laparotomies...	6
Mortality percentage.....	7.5
Abdominal sections after colpotomies	6
Mortality secondary laparotomies...	0
Posterior colpotomies.....	59
Deaths after vaginal drainage.....	0
Deaths after primary sections due to shock.....	3
Deaths after primary sections due to peritonitis.....	2
Death after primary sections due to pneumonia.....	1

In explanation it may be said that the evolution from the abdominal to the vaginal route for the treatment of pus in the pelvis has been gradual. Nine years ago cases were treated from above, where now vaginal incision would be employed. In the next nine years the operative statistics for this class of cases ought to be much better. •

DISCUSSION ON PAPERS OF DRs. SCHENCK AND PETERSON

DR. J. H. CARSTENS, Detroit.—This is at all times an interesting question, because we have these cases always with us. It seems to me that we move around in cycles, and, like Halley's

Comet, swing way around and finally come to the same old place. If you will read the text-books that have been written by some of the first gynecologists, for instance Thomas, note what

Tait and Joe Price have said, and then listen to the papers which have been read this morning, you will see that we are coming around to the same old base. So far as the pathology is concerned, it is wonderful how the old writers recognized the trouble without knowing the exact microbic origin of these various infections. For instance, Thomas in his work beautifully described these pelvic inflammations, called attention to two different varieties, and then laid down the law how to make a differential diagnosis between the condition which they called pelvic peritonitis and pelvic cellulitis. And to-day we come around to that same thing when we look at the question right,—we now recognize two distinct conditions of the pelvis: The one is infection of the uterus, going up into the tubes, producing an inflammation of the pelvic peritoneum, with pus in the tubes, surrounding the tubes and in the adhesions. And there is another kind of pelvic inflammation,—that in the pelvic cellular tissue,—which has absolutely nothing whatever to do with the peritoneum except that the inflammation extends from within the loose cellular tissue to the peritoneum, when you have there a kind of peritonitis which will cause adhesions; but when you open up an abdomen like that, you find that the tubes are intact, the pelvis is free from pus, there is nothing the trouble with the uterus and tubes, but the infection has traveled by the lymph channels through a tear in the uterus or the vagina and has involved the lymphatics and the cellular tissue of the pelvis. These conditions we know are generally of puerperal origin. Those cases we used to have. I operated on them forty years ago, opened and drained them, just like the doctor says. In fact, I invented an instrument to keep them open, because they always closed too quickly, just as he says they close too quickly, when we have a reinfection. I had an instrument made with a spring and a little hook that I put in and kept it open, for if it closed too quickly I would have to do the operation over again. I think I still have that instrument. I do not use it any more now, because I am not quite so timid.

I make the opening good and large, as Dr. Peterson advocates. That is one kind of pelvic inflammation.

Tubercular and other infections located outside the peritoneum will burrow all around, and I have seen them where they have opened in Poupart's ligament, around the crest of the ilium, and at other points. If the patient lived long enough and did not have proper treatment the

pus moved in the direction of least resistance and broke externally.

Another kind of infection is called pus tubes. This condition Tait taught us to recognize, and he had wonderful results in its treatment. Why did he have wonderful results? Because he treated old pus tubes. The patients had been running around in Birmingham for years and years with a gonorrheal infection which finally became sterile; they would rupture once in a while and the woman get a little local peritonitis and be laid up a few weeks, then be up again. And so she would go on, year after year. He operated on some of these cases, then on some more and some more. But these women had developed an opsonic index which caused the peritoneum to have a power of resistance to the infection; besides, these cases were nearly all sterile. Consequently Tait operated on them successfully; he showed the results to his contemporaries, and they jumped on him and said he lied. But he told the truth. His pupils kept on getting a little more courage and a little more courage, until finally they operated also on acute cases, operating on every case of pus tube that came to them, whether of gonorrheal or other origin, and they would spill the pus all over the peritoneal cavity; they did not care much where they spilled it. It would run around and get up on the liver, and if it did not go there in the first instance, they would put in two gallons of water and wash it all over the peritoneal cavity, causing inflammation of the peritoneum, of the stomach, gall-bladder, liver, etc., and the result was great mortality.

Then came Richelieu and other men in Paris, who said, "We will do vaginal drainage;" but they had the same trouble, not draining sufficiently. Then they concluded they would take out the vagina, which they did, when they would have a big opening and the patient would get well, although they sometimes injured the bladder. But, all around, that is a good kind of operation.

When there is a pus tube, I perfectly agree with Dr. Peterson that one could open that pus tube. If we will just think how these things come about, we can see that if we have the chronic cases we can operate on them by abdominal section, but in the acute cases we should simply drain them per vagina. That is about the way I treat these cases. If I have an acute case, the patient suffering and going to be in bed six or eight weeks, and probably eventually recover (as most of them do), what do I do? They will have the pus tube anyhow, and it will rupture or leak, and we will have the

same old trouble. So I just drain through the vagina, as Dr. Peterson says. I generally take scissors and cut into it, take a uterine dilator and tear it open, making it wide, not being afraid to open it too much. I find that most practitioners are timid; they are afraid of hemorrhage or something. Open it up good and wide and then the pus will come out without trouble. Sometimes when opening it you will find it loose, and I have sometimes peeled out the whole tube through the opening, then tied it off or put on a clamp, and it was cured. If not cured, then I would operate later. Sometimes but half the tube is involved. In half of the tube the mucous membrane and the submucous tissues are more or less destroyed, and the tube will contract at that point, but the other end of the tube is still involved and septic, and by and by that will develop also.

Sometimes the entire mucous membrane of the tube from one end to the other is destroyed; the epithelium is destroyed, the mucous membrane sloughs, and beneath there is nothing but a muscular and cellular loose tissue that will all contract and close up. Sometimes we get a tube obliterated just as we do an appendix obliterated, when the patient is cured and will have no trouble in the future. That very often happens. Sometimes when there is only limited involvement of the tube, the opsonins and phagocytes will take care of it, and the patient absolutely recover, even if a little infection is left. But as a rule we should open the posterior cul-de-sac and drain. Sometimes in acute cases I continue this treatment for a week or ten days; then when the patient is all right, the temperature normal, the discharge stopped, I make an abdominal section and remove the tube. In cases where the patient is forty-odd years old, and has a retroverted uterus, a good-for-nothing uterus which will never be of any value, the woman near the menopause, and having a double pus tube, what do I do? The original French operation, vaginal hysterectomy,—take out the uterus, tubes, and everything through the vagina at once. There is very little shock in these cases. It is wonderful how one of these patients, weak and debilitated, will in two or three weeks gain in weight after this operation.

✕ I do not pack the opening with gauze. Why should we use gauze? It does not drain more than twenty-four hours at most, after which it simply walls in the discharge. I put in a rubber tube with cross-piece, and let it go at that, and I put it in so the hole will not close up again. I

never wash it out, but simply open and give nature a chance.

DR. THEODORE A. MCGRAW, JR., Detroit.—I was very much interested in Dr. Schenck's paper, and especially in his remarks concerning the prevention of the extension of gonorrheal infection into the tubes by means of vigorous and correct treatment of the primary condition. We know that acute pelvic infections of gonorrheal origin generally, or at least in many cases, follow an urethritis or an infection of the gland of Bartholin or its duct. These cases often do not come under the care of the gynecologist until the extension has occurred, for the family physician generally attends them in the primary stage. I think in a certain number of cases in this stage, the family physician himself unwittingly and carelessly assists in the extension of the infection from the lower to the upper genito-urinary tract by unwarranted manipulations, such as examination of the vagina by finger or speculum, or by the indiscriminate ordering of vaginal douches. If when the infection is confined to the urethra or to the ducts of Bartholin or Skene, treatment is limited to those areas, and the vagina, cervix and uterus left alone, I think a great many cases of extension of the infection might be avoided.

In regard to pelvic abscess, the subject of Dr. Peterson's paper, I think it should be impressed upon all of us that we should recognize and evacuate all the abscesses. There are often two or three distinct collections of pus; after opening the first abscess, careful bimanual examination with the vaginal finger in the opening must determine for us whether we have to deal with a single abscess or not.

I agree with Dr. Carstens that the drainage tube is better than gauze. I always use it, and never have any trouble from it. We must not, however, use too stiff a tube, because it might ulcerate the bowel.

DR. R. R. SMITH, Grand Rapids.—I am glad to note after all these years of discussion how near together men are coming in the handling of these cases. The terms "radicalism" and "conservatism" have long since had no place in any argument on the subject, but should be used simply to describe technique. Rather, we should argue the matter from the standpoint of actual experience with the various diseases affecting the internal organs of the pelvis, upon a knowledge of the course of these diseases, and what we can accomplish for our patient. In such an argument mere words have but little place.

In the handling of tubal infections, one must

consider in every individual case a great many different factors. In the first place, we must consider and carefully weigh the duration, the nature and the extent of the lesion. These are all very important things, but not all. Into consideration comes also other matters. First, the matter of age. The younger the woman the more reason, of course, for conservatism; the older the woman the more reason for radicalism. These are not merely minor arguments, for the matter of age is very important indeed. We will strive very strenuously to save organs in a woman of twenty-five or thereabouts, whereas in the case of a woman of forty or forty-five years it is only fitting that these organs should be saved if the inflammatory condition is not a serious one.

Then comes the matter of sentiment. I do not think we should overlook this. It is a matter that requires perhaps as careful consideration as anything—the way the woman may feel about the loss of her organs. We know there is a great difference in women in this matter. Some care very little, others are extremely loth to sacrifice even a tube or ovary. I believe that a woman has *some* right to say what she shall or shall not lose. I believe she has a right to say whether she is willing to run a certain danger of continued ill health for the sake of saving say the uterus, or whether she will sacrifice her organs in order to make the cure a sure and complete one.

Then comes the matter of secretion of the ovaries. We do not like to cut short the function of these organs and bring on an early climacteric. We will attach to this factor only as much importance as our actual experience has shown us to be warranted. It has been often exaggerated.

So we must consider all these factors and resort to a great variety of procedure in the handling of these cases. One woman requires perhaps simply removal of one tube, another the removal of an appendage, while others may require the removal of everything.

It is interesting to note in Dr. Schenck's statistics, (my own statistics I am sure corresponding very closely to them) it is interesting to note the number of hysterectomies in that one hundred cases,—thirty-seven, and the report includes one hundred cases of all kinds of infection. Certainly in gonorrheal cases Dr. Schenck believes that most women requiring an operation are not going to be well until everything is radically removed. This is, it seems to me, important to note, because there is even to-day a great deal

of conservative work done that should not be done.

DR. H. W. YATES, Detroit.—One of the most important things we have had offered this morning is that early in his paper Dr. Schenck calls our attention to the growing recognition of the frequency of tuberculosis in these organs. I am sure that this has been overlooked by many clinicians of the past, and it is surprising to note the number of tuberculous infections in this group of cases. This is perhaps one of the most important things that we must recognize, and coupled with that fact is the equally important one that almost every case of tuberculous infection calls for radical operation. On the other hand, in the acute stages of gonorrheal infection operation should almost always be deferred. If anything is necessary to be done at this time it should be simple drainage, as has been brought out.

Cases of acute puerperal origin are of a different type. Many of these demand free drainage, as outlined by Dr. Peterson, and whether that drainage be maintained by the use of a large tube or that of fluffy gauze is a choice which should be made for each case. I suppose that the late Dr. Pryor has called our attention most vividly to this last maneuver, and we must accept his results with the wide opening in the cul-de-sac and a very free use of gauze, as constituting a new era in the treatment of this condition. To him we owe a great deal in the management of acute cases of puerperal fever.

DR. F. W. ROBBINS, Detroit.—It is very interesting to listen to the arguments pro and con as to what a person shall do in face of any important operative procedure, or what procedure should be adopted under certain conditions. There is one argument which does not in all respects seem quite scientific, but it is a balance. We often say that in a certain condition, for this reason and for this reason and this reason, we will do so and so, and for that reason and that reason we will do otherwise. I like to apply in cases in which I am considering the condition of an old man and his prostate, the question, What would I advise in this special condition if this man were my father? And so in the conditions of the uterus that have been mentioned, it seems to me a valuable argument to add to the others that have been brought out, What would I advise if this were my mother or sister?

DR. L. W. TOLES, Lansing.—I wish to speak on just one point that has not, I believe, been touched upon this morning, but which impresses me as being important. We are all, I take it,

quite agreed at the present time that the best treatment for *acute* pelvic inflammation is vaginal drainage. But I have seen quite a number of cases in which the individual patient has been treated in that manner, and been led to believe that this would be the end of her troubles, when she would drag through a period of perhaps years of invalidism without the knowledge that her condition could be bettered.

I feel that when employing this treatment we should impress upon the minds of our patients that the chances are we are not through with them, but may be compelled to resort to more radical means later. Of course the necessity for such procedure will be largely obviated as we become more proficient in the art of vaginal drainage, and some of the speakers here have given us valuable information in this direction. In spite of the best of drainage, however, many of our cases will need care in the future, and the point I wish to emphasize is that they should be warned of that possibility, that they may avail themselves of the chance of a complete cure.

DR. N. N. WOOD, Ann Arbor.—It seems to me that the question of the use of gauze or tube or both may be very profitably studied in connection with two things. First, the pathology of each case as found at operation when the vaginal incision is made, and, second, the post-operative course of these cases in which either form of drainage or both forms have been employed. When this is done it will, I think, be found that there are some cases which do admirably with only tube drainage. In the cases where there is not one large cavity, perhaps quite regular in form, but instead there are a number of pus foci, communicating often by devious routes, the tube does not drain the lateral, deviously placed cavities, which often collapse, and consequently the pus reforms and secondary abscesses either rupture themselves in time or remain unruptured, when the condition persists with septic temperature and the abscesses have to be opened. A loose gauze packing in these cases prevents this and does what the tube will not do. Of course, when there is free drainage of pus the tube acts well, but it is not designed to keep open the whole surface of an irregular pus cavity.

DR. A. S. WHELOCK, Goodrich.—A lesson I have learned from my own radical views in earlier years has been with reference to these patients becoming pregnant. In many cases that seemed just as severe as any that we have

drained and thought necessary to drain, operation being refused, the destruction has proved not so serious as we had believed it to be, and many of these patients have gone on to perfect recovery and subsequent pregnancy, and in after years absolutely no trace of the former trouble could be found. This fact has impressed itself upon my mind because of my mistake in telling these patients of the troubles that might come to them in after years.

DR. ROBERT J. HUTCHINSON, Grand Rapids.—I desire to say a word in regard to drainage. Every person seems to have trouble with the openings closing before the diseased tissues in the pelvis have become repaired. The transverse incision is, of course, the correct one to make, but in making that incision and taking measures to prevent its closing, we must bear in mind that the healthy vaginal mucous membrane and tissues immediately underlying it are the ones that close over and keep in the septic material. By making a T-shaped incision, getting the finger in the cavity and making one incision at right angles to the other, we prevent the two edges coming together. It is almost impossible for the center of that incision to heal before drainage is established.

DR. SCHENCK (closing the discussion).—There is one phase of this topic in regard to which I am rather disappointed we have not had more discussion. Had Dr. Ballin been here to read his paper, I imagine we might have had a somewhat different view of the whole subject and more discussion would have taken place along that line. Dr. Smith has summed the matter up most excellently. One class of cases, however, has not been mentioned, a class which I think is one of the most difficult in the whole group of these troubles, and that is the pus tube, or pelvic abscess if you please, which is situated high up. It is almost impossible to drain it through the vagina without making an abdominal incision, and in several of my cases I have opened the abdomen expecting to do a radical operation, and have found so much pus that I did not dare do it, particularly if it were a puerperal case. Having one hand in the abdomen as a guide, I have punctured through the vagina and closed the abdominal incision. Such cases almost always do well if one is careful with them.

Dr. McGraw spoke of the danger of manipulations causing an extension of infection in acute gonorrhea. I quite agree with this view. One of the best expositions of acute gonorrhea in women is, I think, one by Bierhoff, published

last year in the "New York Medical Journal." Every one interested in the subject should read that article. He treats the condition conservatively but very thoroughly, and lays stress on the point Dr. McGraw has made.

I desire to reaffirm my belief that the difficulty, if we have difficulty in the treatment of these cases, lies in the fact that we are trying to treat a particular lesion, salpingitis or inflammation of the ovary, instead of aiming to divide the cases according to the character of the infection and treating each one just as we would treat an abscess of any other part of the body. This to my mind constitutes the important point in the treatment of these cases.

DR. PETERSON (closing the discussion).—In the discussion of a subject so vast as that of pelvic inflammations, there are many points which cannot be covered in a short paper. But one point in particular has been brought out in the discussion which it seems to me is highly important, the one emphasized by Dr. Smith and especially by Dr. Wheelock. Following abdominal and especially vaginal operations in these conditions, we have found that many patients whom we thought never could become pregnant again have later become so and been delivered at term. This is especially true after vaginal work, that is, opening the cul-de-sac, and for that reason this method should be employed first wherever possible. Although every patient upon whom I have operated by the vaginal route, as Dr. Toles intimates should be done, has been warned that she may be obliged to have a subsequent abdominal operation, it is simply remarkable how many of these women never have to have a subsequent operation, quite a large proportion of them afterwards conceiving and being delivered at term. It seems to me that this is why we should always do the vaginal work first, and not only from that standpoint, but from that brought out in my paper,—because it is a much safer procedure. This fact ought to be constantly emphasized, when so many men are operating as at the present time, namely, that where there is pus in the pelvis radical abdominal work is not the best procedure. If we could get statistics from all over the country, we would find that the percentage of deaths resulting from this work is not ten per cent., but beyond twenty-five per cent. In some sections everything is being treated by the abdominal route, consequently the percentage is high. Of course, where one uses the vaginal incision in the presence of tubercular infection there is great danger that the abdominal work

will subsequently have to be done, but then it is a different procedure from opening the abdomen where the disease is acute. Later on it can be done as easily and the results will be as good as in ordinary chronic appendiceal work.

Years ago, following Williams' report of cases of unsuspected tuberculosis discovered at the Johns Hopkins clinic, I reported upon my own work. A careful pathologic examination of all the specimens removed showed that in many cases in which tuberculosis was not suspected this was the real cause of the disease.

As regards the use of gauze or drainage tube, this is to me simply a detail. Sometimes a tube will be the best, sometimes gauze. I usually use gauze, because I think it works well in these cases, but I have no objection to the tube. If on removing the gauze I find a considerable discharge, I use the drainage tube.

Dr. Schenck brought out a very important phase of the subject, the proper treatment of pus tubes when situated high up. His position is entirely correct. If we are obliged to open the abdomen and find the pus tube high up, it is better surgery to close the abdomen, and open from below, where we can have the advantage of palpation from above. When the operator opens the abdomen and unexpectedly comes upon a pus tube, it is far better surgery, in my opinion, and I am coming more and more to practise this, to put the hand in the abdomen and, after locating the tube, make the incision in the posterior cul-de-sac, so that the pelvic peritoneum is not infected. I think that, working along this line, we will get far better results than if we remove the tube when we discover it to be full of pus.

DR. TOLES.—In cases of pus tube of chronic nature, where the symptoms have pretty much subsided, would you select vaginal drainage?

DR. PETERSON.—Yes, because I cannot tell whether or not it is one of those cases in which apparently we ought to find sterile pus, but really we have an infective organism, which, spread around in the abdomen, would lead to death.

DR. TOLES.—How about the large percentage of tubercular cases where there is pus?

DR. PETERSON.—Whenever I locate pus I get at it through the vagina if possible.

DR. W. R. BALLARD, Bay City.—When in cases of this kind pregnancy follows, do you think it is likely to be ectopic pregnancy?

DR. PETERSON.—A certain number of ectopic pregnancies result, but I do not think we should hesitate on that account to operate through the vagina and drain rather than remove the pus tube.

SOME POINTS IN THE MANAGEMENT OF BREAST FEEDING*

THOMAS B. COOLEY, M. D.
Detroit, Mich

I think I scarcely need say here that successful breast feeding is not so common as all of us should like to see it; nor need I say that, no matter what progress the pediatricists have made and may still make in the science of artificial feeding, the bottle is not, and never will be, a perfectly satisfactory substitute for the breast.

A great deal of attention has been given to this subject during the past few years by pediatricists and by sanitarians. The pediatricists have determined to their own satisfaction that a far greater percentage of the babies could be successfully nursed, at least during the critical first months, than are so fed at present. In fact, it is believed that at least ninety per cent. of all mothers are capable, under proper supervision, of nursing their babies during this period.

The sanitarians, realizing that the mortality among infants is still high, in spite of improvements in producing, handling, and feeding cow's milk, have taken up the subject with a good deal of energy, and there is at present a wide-spread movement on the part of public health authorities to educate the public, and especially the poor, to the possibility and desirability of more general breast feeding.

So far, however, the general practitioner, to whom falls the management of a very large proportion of the babies, has not participated especially in this movement; and I think I may say safely, and I hope without offence, that the average practitioner gives very little study or thought to this really important subject, and conse-

quently, when confronted with any but the most simple and straightforward case, is only too ready, at the first sign of trouble, to give it up and take to some proprietary food.

It is a common experience of pediatricists, enquiring into the history of difficult feeding cases, to find that the child was ordered weaned by the attending physician some time during the first few months, because of colic, temporary failure to gain, or perhaps merely because the mother thought her milk was giving out, or was afraid it was not good for the baby, without any really intelligent attempt having first been made to adjust the difficulty. Sometimes, even, the child is given the bottle from birth, with no attempt at nursing, perhaps because a former child did not thrive on the breast, or for any one of a number of equally valid reasons.

Now if breast feeding is to be as common as it should be, it is the general practitioner who must accomplish it, and he ought, I think, to give the subject more attention, and to be better prepared to meet the more common difficulties.

My idea in preparing this paper has been not to write a treatise covering the whole subject of breast feeding, but to speak briefly of the more common difficulties and how to handle them.

CONTRAINDICATIONS TO NURSING

Under this head I wish to say that one hears some curious things: I have seen a baby put on the bottle at birth by a physician of considerable local standing, because (he said) the mother was nervous, and therefore would give milk which would be

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bad for the child. It is not at all uncommon for a second child to be put on the bottle because nursing, for some reason or another, was a failure with the first.

There are, in general, two contraindications to nursing. First, definite risk of transmitting a serious infection from mother to child, or vice versa; second, illness or weakness of the mother so marked that nursing would be a dangerous drain upon her. If neither of these exists, nursing should be attempted. In regard to the second, it is too often assumed with regard to mothers who are perhaps only temporarily exhausted, and who, with care, might bear the nursing all right.

Another contraindication is, of course, total absence of milk. This, however, is rare, and should not be assumed too soon. If milk does not appear for several days, it is better, with a healthy child, to wait, giving only boiled water with a little milk sugar, rather than give an artificial food so early.

HYGIENE AND DIET OF THE NURSING MOTHER

This is a field calling for the exercise of common sense more than science. The mother should lead a life which fits her to produce good milk. Obvious as this may seem, it is a point often given little attention. Normal exercise, not household drudgery, nor physical exhaustion, is important, and still more important is the avoidance of mental excitement or worry. A bovine placidity is a great asset to a nursing mother. I sometimes think that among the better classes the tendency nowadays is to prolong the period of rest after confinement too much, and that it would be better for the child and just as well for the mother if she resumed her normal life, avoiding, of course, anything like hard work, somewhat sooner. As for diet, it also should be normal and simple, with such additions when necessary as may tend to

increase the milk supply. There are some common and rather foolish superstitions concerning what the nursing woman may eat. For instance, it is usual to find acids and fruits forbidden because of a supposed effect upon the milk. There are a very few foods containing substances which are excreted in the milk, such as the volatile oils of the garlic family. Aside from these, foods affect the milk injuriously only as they disturb the mother's digestion, and I believe it to be better that the mother should be allowed to eat, within reason, what she likes, provided the diet be well balanced and her digestion good, rather than to risk disturbing her nutrition, as is often done, by eliminating things to which she is accustomed, and which are a stimulus to appetite. In other words, the diet should be agreeable to her. As to the use of gruels, cocoa, and the other things given to promote milk formation, they should be given not so much as a routine as when they are needed. When they are used, it should be borne in mind that if they are pushed to the point of being disagreeable, their effect is likely to be lost, and the mother's digestion may be upset. This is especially true of milk, which many women do not take well in quantity. As to the choice of these articles, it is not of so great importance. The point is to get a well-balanced food, with plenty of fluid at the same time, and it is because of these qualities rather than because it is milk, that milk is of value. Of gruels, that made from corn meal is probably the best. Cocoa made with milk has the advantage of being often better taken than plain milk. The malt drinks are often objected to as producing milk of poor quality. Inasmuch, however, as the milk, when insufficient in quantity, is very likely to be somewhat overrich, these preparations meet the indications in many cases very nicely, provided always that they are agreeable to the mother, and do not disturb her digestion.

THE FEEDING INTERVAL

Nothing, in my opinion, has more to do with the various disturbances in the course of breast feeding than too frequent nursing. The current practice seems still to be to feed the child every two hours during the first six weeks, then every two and one-half hours, and so on. Just how this practice originated I do not know, but I am convinced that it is pernicious, and am glad to say that the number of specialists who have adopted a longer interval is constantly growing. The child who is fed every two hours has almost never, during the day at least, an empty stomach. The stomach gets no normal rest, and a mild gastritis not uncommonly follows. This is especially likely if the milk is somewhat overrich, fat being always slow to leave the stomach, so that often portions remain from one feeding to the next. Spitting, colic, the false hunger resulting from an irritated stomach, and sometimes more serious conditions, are likely to result. Not all of us follow Czerny and Keller in recommending a four-hour interval from the start, but I think that a large proportion of the more progressive men are now urging that the feeding be never less than three hours apart, and about four hours after the first few weeks.

Another point in regard to the feeding interval. One meets many physicians and more nurses who insist on absolute regularity in the interval. On the stroke of the clock the child is to be put to the breast, hungry or not hungry, sleeping or waking. Now doubtless a reasonable regularity works for the convenience and comfort of the mother, but I cannot believe that the child will digest so well if urged to eat before he is hungry or when wakened from a sound sleep to feed. Certainly I feel that I get better results from my own method. I usually order, during the first two or three weeks, that the child be nursed not oftener

than every three hours, nor more than seven times in twenty-four hours. After this period about every four hours, and not more than six (better five) times in twenty-four hours. With these restrictions he is to be fed when he is hungry. I make an exception of the last evening feeding. If the child is asleep at the mother's bedtime, it is usually best to waken him. I adopted this system very tentatively, feeling not at all sure how it would work, but have found it invariably easy to manage, with much more comfort for both mother and child. Babies fed in this way almost always sleep better, cry less, and need less attention.

COLIC

Of all the disturbances incident to breast feeding, none is more common nor more annoying than colic. In fact, many people seem to regard it as a matter of course—inevitable and irremediable. It is more frequent during the early weeks, is likely to be accompanied by stools containing soft white curds, and is, I think, almost always the result of fat indigestion, of which the white curds are an indication. Many women, and especially young mothers, secrete during early lactation, and particularly in the time when they are still in bed or not getting a normal amount of exercise, a milk somewhat overrich in fat, and some, especially if their diet is injudicious, continue to do so for months. Fat fermentation, and colic, are quite natural results of this condition; but it is remarkable how much less one sees of them with the longer feeding interval. The lengthened interval is not, however, always sufficient to do away with the colic, and then it may be necessary to attempt to make the milk less rich, by diet, the taking of fluids, exercise, etc. Sometimes, in addition, one may dilute the milk in the baby's stomach by giving a little boiled water or soda water before the nursing. An occasional clearing out of the fermenting matter with cas-

tor oil is of considerable value. It must be said, however, that there are babies who continue to be colicky in spite of all one can do for them. If they do well otherwise, it is not wise to wean them for this alone. Colic seems also not infrequently to be caused by too much milk, and in this case cutting short the nursing is usually all that is needed.

VARIATIONS IN QUANTITY AND QUALITY OF MILK

These are common, depending upon the mother's diet, her physical condition, nervous states, the appearance of menstruation, etc. Variations in quantity may be detected by a method which ought to be more commonly used than is; viz., weighing the child before and after feeding, the difference in weighings showing the quantity obtained. The information obtained in this way is very valuable, and almost indispensable, when the question arises whether the supply is sufficient for full breast feeding, or whether mixed feeding or weaning is necessary. It is common for the mother to think from the child's behavior that the supply is insufficient, when the fact is that he is getting too much. Variations in quality may of course be detected by analysis of the milk, and for this purpose the fat determination is usually sufficient. Analysis, however, is not always necessary, and is often misleading. It is well known that different infants thrive on milks varying widely in fat content, and in most cases the child's behavior and the character of the stools are as good a guide as an analysis, or better. If the milk is too rich for the individual child, he is likely to be colicky, to spit up fat curds some time after nursing, and to have stools which smell sour and look greasy, or contain soft white fat curds, often with mucus. A milk which is distinctly deficient in fat looks watery to the eye, and the child, while usually manifesting no especial di-

gestive disturbances, does not gain in weight and is hungry.

Variations in the quantity of milk can often be corrected by giving the mother more or less fluid, regulating her exercise, and so far as possible preventing nervous disturbances. There is a good deal of doubt as to the effect of drugs in increasing milk secretion. I am inclined to believe that thyroid at times does have some effect. It is to be carefully watched.

Overrich milk may usually be to a considerable extent corrected by more exercise, more fluids, and less proteids and fats in the diet. If the milk is only slightly poor, an attempt may be made to increase the fat content by the reverse of this régime. When the milk is distinctly low in fat it is almost invariably an indication for weaning.

It is quite possible to do too much in the way of weighing, milk analysis, and changes of diet. I have seen more than one mother, perhaps already overanxious about her ability to nurse the baby, so worried over slight abnormalities in the stools, analyses of the milk, and attempts to correct trivial variations, as to lose her milk altogether. If the baby is doing fairly well, it is best not to fuss too much.

ABNORMALITIES IN THE STOOL

Some of the most important of these have been mentioned. Moderate frequency, fat curds, lack of smoothness and homogeneity, and even small amounts of mucus, are less important in breast feeding than in bottle feeding, and usually one need not pay much attention to them unless as an indication of the cause when there is definite digestive disturbance. If mucus, frothy stools, or gas, are common, an occasional dose of oil (not calomel), to remove fermenting material, may head off trouble. Fermentative disturbance and bowel infection occur in breast as well as in bottle feeding, and may necessitate temporary

withdrawal of food, in which case care must be taken to empty the breasts regularly in order that the supply may be preserved.

MIXED FEEDING

Sooner or later, the time will come with most women when the supply of milk is insufficient, and at this time mixed feeding, from breast and bottle, is usually resorted to. The common way is to replace one or more breast feedings by bottles. When this is done, the stimulus to the mammary gland offered by regular nursing is partly withdrawn, and as a result the supply diminishes more rapidly still, and soon another and another bottle feeding must be added, until in a short time the child is weaned. From the sixth month on this may be all right, but at three or four months it is not to be desired. It certainly seems more sensible, and has worked much better in my experience, to supplement each nursing by a small bottle feeding, rather than to discontinue any of the nursings. Moreover, as the breast milk when it diminishes in quantity is often overrich, this fault can be corrected if it is mixed in the stomach with rather dilute cow's milk. Mixed feeding managed in this way can often be successfully carried over a period of months.

WEANING

If breast feeding, or mixed feeding, has gone satisfactorily, the time of preference for weaning is at nine or ten months, and it is easily managed through mixed feeding by shortening the time at the breast and giving more from the bottle until the feeding is all artificial. In this way one has a chance to bring the child easily to a proper milk modification, and soon to whole milk.

Earlier weaning may be indicated by persistent failure to gain in weight on the breast or mixed feeding, or by digestive disturbance of importance which cannot be remedied by any changes in diet, nursing interval, etc. Sudden weaning may at any time be necessitated by illness of the mother, or complete cessation of lactation. It is important here to begin the artificial feeding with a more dilute mixture than a child of the same age and weight would take if already accustomed to cow's milk.

Unnecessary weaning, because of slight digestive disturbances, colic, green stools, etc., is altogether too common. One hears that the doctor told the mother her milk was "poisoning the baby," when really a little patience would have brought things out all right. It is always to be remembered that it is a great handicap to a baby to be put on artificial food during the first three or four months, and that the conditions leading one to do this should be really serious.

CONCLUSION

In conclusion, I want to say that what tendency there is to a change in methods of managing breast feeding is not the result of following out anybody's preconceived theories.

It appears to me that there is here something of a "back to nature" movement,—an inclination to follow, so far as possible in an artificial civilization, the methods of the animal and the aborigine; and surely it is reasonable that such a normal, physiological process should be led as much as may be in the normal, natural way.

DISCUSSION

DR. H. McLAREN GALE, Bay City, Mich.—I feel that I ought to rise to endorse the writer's paper. I think it an excellent one, and corresponds to my idea of handling the feeding of children.

First of all, he emphasized the regular and liberal feeding of the mother with plain food, and then insisted on three to four hour feeding in place of two hours, which is unnatural and cannot but be injurious. In my experience

those two things are particularly worth paying attention to, not forgetting the importance of one long interval between feeding during the night of six or eight hours. For colic in children you will find that care in the diet is the main thing, as the cause of colic is mainly too frequent feeding. By understanding the time required between feedings, you will do a great deal in checking any trouble. So far as my experience goes, I think the whole paper was an excellent one.

DR. HERBERT M. RICH, Detroit.—I would like to emphasize the importance of this paper. It seems to me that so far as the practice with children is concerned there is no more important subject to be considered. Too often it is taken for granted that nature's method will handle the case, when, as a matter of fact, very slight directions and little attentions on the part of the doctor will often go a great way in enabling the nursing to be carried on successfully. I am sure we will all agree with Dr. Cooley's directions in that respect.

There is one point upon which I am also sure he will agree with me, but his paper was so short he hardly had time to mention it, and that was the use of wet nursing in substitute feeding. It seems to me that it can hardly be denied that, in a very young child, if you can give it mother's milk that is the thing to do. We have not in this country employed this method to any such extent as they do abroad, but we might very well as a profession encourage the practice of wet nursing. It is often disagreeable, and makes considerable trouble. A professor in Harvard had an experience some years ago which we probably all have had. He said that the "ordinary wet nurse is nine parts cow and one part devil," and I am sure he has our sympathy. At the same time it is worth considering. They have recently introduced in Boston a directory of wet nurses, very much as we have our directory for trained nurses, and these women are paid usually not by the week, as has been customary heretofore, but according to the amount of milk which they furnish. I am told that that one change in the payment of nurses has very largely changed the aspect of the problem. The difficulty in making these women observe sanitary precautions and regulations which the doctor prescribed, is obviated by reason of the fact that they get more pay if they have more milk. They pay them four cents an ounce for the milk which the child gets, the child being weighed before and after each nurs-

ing. They say it is a very successful plan, and it would be well to consider it.

DR. E. E. CURTIS, Saginaw.—In regard to wet nursing I would like to offer suggestions that I have found of considerable value, and I think I have in this way been enabled to save a number of babies' lives, and that is by procuring for the baby two or three wet nursings a day. It is very difficult in our town to secure a wet nurse to devote her whole time to the baby. I have found in bottle-fed babies a month or two old, where they were failing, that in some cases the parents would have a relative who would give the baby one or two nursings a day possibly, or perhaps, if they had no relatives to do this, some woman in the neighborhood might be willing to give the baby one or two nursings a day, so that the baby's life has been saved, I think, by this method.

DR. JOHN H. CROSBY, Otsego.—I feel that to the general practitioner this matter of breast feeding is of the utmost importance. Recently I have taken occasion, whenever I have taken a case of confinement, immediately to give some definite instructions as to the care and proper feeding of the baby. I have found that the results have been uniformly good when I have taken these pains.

I believe that there are very few contraindications to breast feeding. Of course we know that there are certain women who have absolutely no milk at all, and they must be ruled out, as Dr. Cooley has pointed out, but in most cases of so-called contraindications it is simply mismanagement of the feeding. If in these cases we pay attention to the management of the proper interval, and the proper length of time of nursing, much will be accomplished in saving the breast to the child, and every day that the baby takes breast milk its chances are so much better for life.

I had an opportunity not long ago to observe the methods of feeding in some of the clinics in Berlin, and I found that in the hospitals four-hour intervals are followed in every case for the first six weeks. The baby was fed six times in twenty-four hours, and after six weeks, in the normal child it was fed five times from six o'clock in the morning until ten o'clock in the evening, and nothing from then until six o'clock. The results were uniformly good.

A point that we should bear in mind in this matter of breast feeding is that in diarrhoea there is usually indicated too much milk, while constipation indicates too little milk, while the

opposite is the rule in the artificial feeding of children. We often have a complaint of diarrhoea in a breast fed child, and if we will simply cut down the amount of food the child is getting we can usually correct the trouble. Very often in constipation, by increasing the amount of milk the child is getting, we correct the constipation. These are some of the principal points, it seems to me, in the matter of infant feeding. Another thing that should be borne in mind is that the child, when it gets to be eight or nine months old, requires something besides mother's milk, because some of the salts of the mother's milk are insufficient for the developing needs of the child. The child is born with about enough iron to last it eight or nine months, and the mother's milk contains very little iron salt, so that very often the child should be given a supplementary feeding of vegetable soups, vegetable gruels, and stewed fruit, not raw fruits, in order to supplement the salts and other constituents that are lacking in the mother's milk.

DR. M. L. HOLM, Lansing.—I would like to add a few words to Dr. Cooley's very excellent paper merely from a laboratory standpoint. As a general thing, if the mother's milk is sufficient in quantity and the child is not doing well, the physicians will send the milk to some laboratory for analysis. I find that about two-thirds of the samples received at our laboratory consist of the first portion of the milk, and those who send it are usually surprised to find that the fat contents amount to about one and one-half or two per cent.

Invariably when milk is taken for analysis, the entire quantity from one breast should be taken. If less than this is collected, it will be low in fat if the sample represents the first portion and high in fat if it represents the last portion. I believe the fat contents is a good indication of the general quality of the milk, but the entire milk of at least one breast should be collected and the whole amount, or a portion of the whole amount, presented for analysis.

DR. COOLEY (closing the discussion).—In regard to the question of proteid indigestion, in my experience this is very rare in a child at the breast except in case of overfeeding. If a child is overfed all around, and there is too much milk, you get very often a general indigestion, but otherwise to have proteid indigestion with breast milk is a pretty rare experience.

In regard to wet nursing I believe that it is not anything like so common as it ought to be

in this country. It is one of the greatest helps in managing babies, and I think you will agree with me that the general practitioner appears to be too confident of the success of bottle feeding.

The more we have to do with child feeding the more we understand that we can do a whole lot better with the breast every time. We should not be in a rush to adopt the bottle unless we are driven to it. The wet nurse ought always to be thought of, when a child has to be weaned during the early months. If a wet nurse is possible the child ought to have it. There is no question at all about that.

With regard to the statement of Dr. Holm in regard to the collection of samples, it is often not possible to get all the milk with the breast pump.

With a great many women it is barely possible to get enough for analysis. In those cases what I do, and I find it works pretty well, is to get about half as much as you think will be necessary for analysis, and you can usually get that drawn. Then let the baby nurse a while. That starts up the milk, and then you get the other half from the strippings. You get a pretty good average sample then, a sample which you cannot always get from a woman in any other way.

I have a little story in regard to the possibility of maintaining the breast milk in some cases. Physicians are too ready to give up trying to get a supply of breast milk. A couple of years ago I had a patient brought to me from another town. The child was born, we will say, in December. I saw the patient about the first of May.

The child was then on the bottle, and was a case of decidedly difficult feeding. I fussed with it a short time, and then got a wet nurse. Something happened to her, and I got a second one. She proved to be no good, and so I got a third. The mother came to me about the beginning of July and said there was still a slight watery secretion, and asked me if I thought it possible to get her breast milk back. I said that I did not think so, but thought it would be worth trying. I told her to take the wet nurse's healthy baby and put it at her breast. Two weeks later the wet nurse came down with typhoid. The mother at that time was able to take the baby and nurse it from then on with perfect satisfaction. The child went from eight and one-half to twenty pounds at the end of the year.

THE OPERATIVE TREATMENT OF CONVERGENT STRABISMUS*

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There are few ocular disabilities about which there is so much bad advice given as squint. How many mothers have been recommended to let their children outgrow a marked deviation of the visual axes when they consulted their family physician. Even among specialists, a considerable diversity of advice is sometimes obtained by the anxious mother who consults a number of oculists in the hope of getting similar advice from several independent sources. That the question is far from settled, I am quite ready to admit, but certain points already exist about which we can come to an agreement.

The deformity of cross eyes, being such a disfiguring one, must have come early to the attention of the medical fraternity. In the latter part of the eighteenth century, that celebrated charlatan, Chevalier Taylor, advertised he could cure these unfortunates. What operation he did, if any, remained unrevealed to the world. Strohmeier, of Hanover, in 1838, was led to advise a trial of dividing the adductor in cases of convergent strabismus, in consequence of his attention having been directed to the cure of deformities of the limbs by the cutting of contracted muscles and tendons. Based on this false analogy, he proceeded to do the operation on the cadaver. Pauli, of Landau, first attempted it in the living, but the eye was unsteady: he divided the conjunctiva, but failed to divide the muscle or tendon. However, in 1839, Diefenbach succeeded in doing a myotomy of the internal rectus for converging squint. Macken-

zie, in his classical work (1854), describes an open operation through a half-inch vertical incision. If the distortion was slight, the tendon was cut near its insertion. If great, the muscle was dissected toward the caruncle and divided at a distance from its tendon, sometimes a portion of the muscle being excised. Elliot, of Edinburgh, made the important suggestion that the other adductor be cut, instead of confining operative interference to one eye, when the deviation was great.

As early as 1853, Walton found the literature of the subject enormous and the pages of authors filled with most dissimilar principles and results. He himself held it questionable whether permanent squint was ever relieved except by operation. The attempts to cure squinting by goggles, side glasses, side reading, by binding up one eye, by patches of black sticking-plaster on the point of the nose, etc., were in his opinion unsuccessful. He held one eye to be sound, and the other eye as affected and hence to be operated upon.

Wilde, of Dublin, in 1844, reported a case of squint in which double tenotomy of the internal recti had to be combined with a guy suture through the stump and anchored to the malar bone by adhesive plaster. Walton reports cases which were operated on by others subconjunctivally in which the vitreous was evacuated in one and two went on to suppuration. He also quotes from Desmarres (about 1847) a case of double squint operated on in which both eyes became prominent and turned outwards. After a number of operations on the external recti without benefit, the

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muscle was searched for, discovered far back adherent to the sclerotica, and detached. The position of the internal rectus was in like manner sought for through dense cicatrices of consecutive vegetations; after a dissection, which is described as something desperate, it was found drawn within its sheath and the orifice obstructed. The sheath was opened, the muscle was drawn out and applied against the sclerotica. Now was to be fulfilled the important indication of maintaining the eye inwards, to favor the insertion of the muscle and the fascia, at a point sufficiently anterior to prevent the former evil. A waxed thread was passed with a sewing-needle through the fascia near to the cornea, and the eye thus secured was turned inwards about a centimetre, and so maintained by attaching both ends of the thread to the back of the nose by a plaster. In the afternoon of the next day, the thread became loose, and, says the author, almost incredible to relate, the inward movement of the eye was re-established, but not the outer. This is the earliest account of an advancement I have been able to find.

Robert Brudenell Carter (1875) had a clear conception of the binocular character of internal strabismus. He maintained that a perfect result could seldom be obtained by an operation on one eye alone, and the effect should be divided as nearly as possible between the two internal recti, thus giving equal prominence to the eyes and equal sinking of the caruncles and equal power of convergence in both eyes. Liebreich aimed to prevent the sinking of the caruncle by completely dissecting the conjunctiva from the subjacent parts, and thus curing a very large deviation by operating on one eye alone. This may give a good distant result, but badly cripples the eye in depriving it of the power of convergence. Carter advocated practically a subconjunctival operation

instead of the older open one for tenotomy. He describes an advancement operation, which is advised for divergent strabismus, and in which the sutures were attached to the conjunctiva above and below the cornea.

Dr. J. F. Noyes, of Detroit (1874), described a very simple method of advancing the external rectus in cases of convergent strabismus either with or without a tenotomy of the internal rectus. The external rectus is exposed by a horizontal incision and the tendon is lifted out on a blunt hook. The tendon is then divided near its insertion on the ball, leaving enough end or stump so that the other end of the divided tendon can be carried under it, lapped and secured by sutures. The amount of the shortening thus effected must by actual measurement equal the deviation to be corrected. If it be found necessary to do so, a portion from the end of the tendon may be cut off before carrying it under and lapping as above described.

H. Knapp, in Norris and Oliver's System (1898), says: "In comitant strabismus, the single simple tenotomy, strictly limited to the tendon of one eye, is the operation for low degrees of convergence, be the strabismus constant or alternating. Under the proper precautions, the operation is perfectly safe and should not leave any unpleasant consequences. In medium and higher degrees, the double simple tenotomy, i. e., the unextended division of the tendon of each internal rectus, is indicated, and will produce just as perfect results as the single tenotomy in the low degrees. Of late the advantages of advancement have been so much and so justly dwelt upon by Landolt, Wecker, and others, that this operation has now come into greater favor than, in my opinion, it deserves. During the last twelve years I have made many advancements in comitant convergent strabismus, always with tenotomy of the antagonist, yet grad-

usually I have returned, in the majority of cases, to the double tenotomy."

Advancements were introduced by Jules Guérin and the technique of the operation was improved by Critchett. Landolt as early as 1878 strongly advocated advancements done on appropriate cases, without tenotomy of the opposing muscle. He held that cases of strabismus were entitled to ordinary treatment for a certain time. When, however, the strabismus dates from long ago, when mydriatics do not modify it and when it is concerned with a very amblyopic eye, one can proceed to operation without hesitation. He believed that tenotomy often fails to correct the strabismus, that the internal squint is often transformed in later years to a divergent strabismus, and even when this does not occur, weakness of convergence has been established. He therefore advocated advancement of the external recti, and as concomitant strabismus is a binocular affection, the same operation should be performed on both eyes at the outset. He has never found occasion to regret the overcorrection which occurs only too frequently after tenotomy. Tenotomy in addition to advancement, to increase the effect, is only necessary in the highest degrees of strabismus and especially in paralytic strabismus. It is best not to do both advancement and tenotomy at the same time, but to await the result of the advancement before proceeding to a tenotomy. Binocular bandaging is peculiarly important after the operation for convergent strabismus. Darkness, inactivity, the absence of any object that might provoke an effort of convergence, become in this case, with atropinization, powerful orthoptic therapeutic agents. If the effect of the operation should seem excessive, atropine may be suppressed; but one is not to be frightened by even a marked divergence after advancement. It is formidable only

when the internal rectus has been tenotomized. It is best to continue orthoptic treatment for a long time to complete the cure of the case. According as the tendency to convergent strabismus is more or less abolished, and according to the age of the patient, we make him wear convex lenses correcting the manifest hyperopia either constantly or for near work only. We do away with them entirely if there is any tendency to divergence. We should resume, on the contrary, all the treatment of strabismus—atropinization, correcting lenses, and repose of the eyes—if the convergence reappears.

Wootton more recently (1901) has been a strong advocate of advancements. He holds that tenotomies, as primary operations, particularly in convergent cases, are at best hazardous procedures. Apparent parallelism, for the time being, is frequently obtained, but almost always with great sacrifice of the power of convergence. In general, however, even this parallelism is merely apparent, binocular fixation is not really present, and in the few cases in which binocular single vision is found to exist, it is frequently subsequently lost. The reason for this is not difficult to understand. The convergence having been rendered insufficient by the operation, the patient suffers from asthenopia at near work, in consequence of which he gradually abandons binocular fixation, at first for near objects, later for those at a distance, and the eye with the poor vision diverges. In fact, the case, at first one of convergent strabismus, has become one of insufficiency of convergence, and later one of divergent squint. The operation, one might almost say, has attempted to cure the causative factor, the hypermetropia, by superadding a pathological condition, a relative insufficiency of convergence, ignoring the fact that an excess of converging power is a normal condition with an uncorrected

hypermetropia. Advancements in such cases produce no insufficiency of the associated functions of the eyes, and seek merely to restore the status *quo ante*. Furthermore, the mobility of the eyes, the extent of their lateral rotations, is not limited by such operations, and any one who will take the trouble to map out the fields of fixation in these cases can assure himself that the advancement of one of the straight muscles of the eye does not restrict the action of its so-called antagonist.

Bettremieux has recently remarked upon the surprising differences of opinion at the present day concerning essential points in the treatment of strabismus. As regards the age most suitable for operations, opinions vary between five and eighteen years. Priestley Smith believes in early operation. Javal came to hold similar views, sacrificing every other consideration to the fundamental aphorism that binocular vision can be the more readily re-established the nearer the period to the commencement of the deviation. Bettremieux advises operation upon children in whom six months or a year's medical treatment has failed.

Baker prefers advancement to tenotomy or a combination of both, but seldom finds it necessary to operate under ten years.

Edward Jackson has recently advocated and practised tenotomy of the internal rectus combined with tenotomy of the inner portions of the superior and inferior recti.

These few quotations from the immense mass of literature are enough to emphasize the great differences of opinion which have always and still continue to exist as to the treatment of this condition. It suggests that some facts are as yet to be discovered upon which can be based a system of treatment which will appeal to us all. There is no question but that tenotomy is a simple, easily performed operation,

which would be the operation of choice were the results certain and permanent. Advancements must show a marked superiority in final results to justify their difficulties and the necessity for laying up the patient for a week or more. That the double advancement of the external recti leaves the eye with a more normal convergence and a more normal amplitude of movement, I am satisfied from the study of my own cases as well as others. There is also practically no danger of an over-effect. That it is sufficient in all cases, I am not prepared to assert, as paralytic and extreme degrees of deviation may require a tenotomy as well and there may also be good and sufficient reasons for confining the operation to one eye.

Most of the cases presenting themselves to a clinic are of many years' standing, with a marked deviation and an amblyopic eye. Many even of these can be relieved by non-operative means, as we have all repeatedly seen. Let me quote two from a number I might mention. In May, 1905, a lad of nine years presented himself for treatment with a deviation of 20 degrees which he had had for five years. On examination he was found to have a high degree of compound hyperopic astigmatism, the correction of which reduced his squint so much that it ceased to be a deformity. In another child of six years the deviation amounted to 32 degrees, and had existed for four years, but was practically cured by the correction of a high compound hyperopic astigmatism. Just why some of these with very similar refraction and history show such different results to optical corrections is very hard to determine. Two things, however, seem to act favorably in this respect; first a short duration of the squint, and, second, a high degree of hyperopia which can be corrected.

My first case of double advancement was done something over seven years ago, on a

lad of twelve years, and while he still has his amblyopic eye, the cosmetic result is excellent and one would not know to look at him that he had ever been operated upon.

About five years ago, a lad of seven years came for treatment. One eye was down to 3-200 vision and the deviation was 44 degrees. There was no central fixation in the right eye and the patient had already been treated by a colleague for from three to four months. He had a high hyperopia, complicated by some astigmatism in the better eye, but the correction of his ametropia made no improvement in his squint. As the deviation was so extreme and there was no hope of binocular vision, I limited the operation to the visually defective eye, and did a tenotomy of the internal rectus combined with Worth's advancement of the external rectus. This secured a good cosmetic result, while a simple advancement would have failed to give enough effect to have achieved this result.

In a girl of seven with 36 degrees of convergence and a high amount of compound hyperopic astigmatism, I did a double tenotomy and secured a slight undercorrection. In another girl of four and one-half years, with a squint of 28 degrees, a partial relief was obtained by refraction and then an internal tenotomy of one rectus gave a slight undercorrection.

Nearly six years ago a boy of five years was brought to me with a convergence of 36 degrees and vision reduced to 4-200 in the squinting eye. He had a high degree of hyperopia, complicated by a marked astigmatism in the defective eye. The squint was of two years' duration, but showed considerable improvement in the six months he was kept under treatment. His right external rectus was first advanced after Worth's method. The immediate result of this was good, but the stitch pulled out before the muscle could become ad-

herent to the sclera, and there was still convergence. A month later, the left external rectus was advanced. The immediate effect was a slight divergence, but this was not permanent, and a few weeks later, the right external rectus was dissected free again and at operation was found to have dropped back after the first operation nearly to its original insertion. A tenotomy was later made under cocaine on the right internal rectus, and the patient discharged with straight eyes, which were still straight some years later.

The sister of this last patient, a little girl of seven years, consulted me about the same time, suffering from a similar condition which had followed an attack of whooping-cough two years before. She had 32 degrees of convergence and only 3-200 vision in the right eye, in which central fixation had been lost. The retinoscope showed a high degree of hyperopia, the correction of which reduced the squint to 20 degrees. After several months' treatment failed to show any continued diminution in the squint, a double advancement of the external recti was done, which resulted in an overeffect temporarily and subsequently straight eyes, which remained so when heard from some years later.

In a case of alternating strabismus seven years of age, the squint had existed ever since babyhood and was 28 degrees in amount. In spite of the fact that there was a high degree of compound hyperopic astigmatism present, the correction of the refraction made practically no improvement, and after a year and a half, I advanced both external recti, getting a marked improvement. This was done four months ago, and although still improved at present, he still shows some convergence and cannot be said to be even cosmetically cured.

A lad of eight years was brought to me about a year ago with the history that his eyes had turned in since he was six months

old. He had a moderate compound hyperopic astigmatism and a convergence of 30 degrees without his lenses and 24 with them. He had been refracted by a colleague without material improvement. A double advancement was done on the external recti with excellent results, and when seen a few weeks ago the eyes were practically straight, with perhaps a little convergence near by.

In April, 1908, I saw a little girl with a 40-degree convergence and a high compound hyperopic astigmatism. The squint was of three years' duration. The optical correction reduced the squint to 30 degrees, and at times the eyes were straight, according to the parents. This condition did not improve, however, and last August I did a double advancement and got a temporary overcorrection, which soon passed away leaving the eyes straight with glasses and convergent without them.

The only overeffect I have ever seen was in a young man of twenty-two years, who had squinted since childhood. He had a convergence of 28 degrees and a high compound hyperopic astigmatism. The glasses improved the squint somewhat. Two years ago, a colleague did a tenotomy of the right internal rectus, without, however, very much effect. Both external recti were advanced and great divergence obtained, as they were powerful muscles. Some diplopia occurred immediately after bandaging was discontinued, and this

returned on the use of the strong lenses needed to correct his hyperopia. I attribute this to the previous tenotomy, which has left his internal rectus at a disadvantage. Muscle exercises and treatment have overcome this tendency, and he is no longer troubled with diplopia except in the extreme right portion of his field of fixation.

The problems of convergent strabismus are not by any means solved. It is, however, established that the earlier the treatment is instituted, the better the chance of success. The child is never too young to be treated. When, however, treatment fails to show any further improvement in the deviation, operative interference must be considered. While advancements are much more difficult of performance and, considering the size of the organ on which they are performed, are operations of some magnitude, still the results are such as to recommend their use in the majority of cases which require operation. It must be remembered, however, that an operation in these cases is only part of the treatment and not the whole, and should be followed up with exercises calculated to develop the fusion sense and do the finer work of adjustment. They have the great advantage of leaving the power of convergence uncrippled. Since they have almost no danger of causing an overeffect, one can proceed to their use earlier in the treatment than one would care to do were he limited to tenotomies.

DISCUSSION

DR. WALTER R. PARKER.—It is very difficult to give in a few sentences the operative treatment of convergent strabismus, as the conditions are so variable that each case must be carefully studied before an opinion can be given. I believe, however, that the operation of tenotomy still has a field of usefulness and should not be abandoned, in spite of all that has been written in favor of advancement. In cases with fifteen to twenty degrees of convergence, not due to par-

alysis, I believe a single tenotomy, to be followed from three to six months later by tenotomy of the muscle on the opposite side, if need be, will often lead to good results. In the exaggerated cases I believe that a tenotomy combined with an advancement on the same eye, after the method of Worth, gives the most satisfactory results. Many cases, once thought to be suitable for operative procedures, are now cured by careful refraction, enforced use of the squinting eye, and

by the use of the amblyoscope. Every case should be studied for a long time, over a period of months, before it is subjected to any operative interference.

DR. H. H. SANDERSON.—It has been a pleasure to listen to Dr. Connor's paper, bringing up to date this difficult subject,—the treatment of squint. The historical part of the paper was of great interest, placing before us the gradual progress in the study of squint, since ancient times.

There are many problems still unsolved, but we have learned much in the management of such cases, and particularly the time of life at which non-operative treatment is effective.

The studies of Worth have made much possible by way of development of the fusion sense in those cases that come to us before the sixth year, but more than all have they helped us to apply a scientific method of investigation to our cases, without which no treatment operative or non-operative should be pursued.

This, it seemed to me, is the most important point in the management of a case of squint,—the thorough investigation of the case as to the time, the character, the angle of the squint, the fusion sense and particularly the objective refraction. The method of correction by operative means, as the paper states, has been used for centuries, and the simplicity of an ordinary tenotomy has led many to attempt it who are wholly incompetent, although immediate results often give great promise. This old and simple method has its proper field to-day, especially when combined with advancement, and in many cases, selected by careful preliminary examination, a single or double tenotomy suffices.

Worth's advancement operation has certainly proved a very rational procedure. The hold it has taken on the eye surgeon during the short time it has been done amply proves its usefulness.

With the double advancement brought out by the paper, I have had no experience, but was glad to know of the favorable results obtained.

DR. LEARTUS CONNOR.—Year: ago Landolt said, "An operation for strabismus, not based on a thorough study of refraction and muscular motility, is a crude and barbarous affair." The results of Dr. Ray Connor's strabismus operations show that he added to Landolt's requirements a development of the fusion sense, both before and after operation. Since his cases were mainly in young children, we can appreciate the difficulties under which he worked. The perfection of his technique is shown by

the frequency with which he secured a parallelism of the visual axes. Doubtless this was due to his general use of an advancement (often double) in lieu of one or more tenotomies,—an added proof that overcorrection is rarely if ever obtained by advancement of the external recti, while it is a frequent result of tenotomies.

Tenotomies will always have a place among strabismus operations, but only as aids to advancements. "Tendon tucking" operations are ineffective attempts to avoid the difficulties of advancements while gaining their advantages.

The paper's historical sketch of strabismus operations shows their evolution from a simple technique to a very complex, from uncertain results to certain and stable ones. But these results are possible only to such operators as master the technique of advancement and direct it by an exhaustive study of refraction, muscular motility, and fusion sense.

DR. J. E. GLEASON.—I have never done the advancement of both external recti for the correction of internal strabismus, but in the light of Dr. Connor's experience I would be inclined hereafter to try that procedure. I have always preferred to do a tenotomy combined with an advancement if a simple tenotomy was insufficient, thereby confining the operative procedure to the squinting eye. I think a divergence following a tenotomy is more common than we realize, for the reason that patients with that unfortunate occurrence rarely return to the original operator. I have corrected two such cases within the last year, divergence following the original operation after intervals of five and sixteen years respectively.

DR. EUGENE SMITH.—I believe in the thorough trial of atropin and orthoptic treatment between the ages of two and six years. If, however, after some weeks' or months' trial there is no improvement, then operative measures must be adopted. Atropin and correction of the refracting error is most successful in alternating squint. In cases where the squinting eye has a high degree of hyperopia and the fellow eye a low degree, fusion is manifestly impossible with glasses which correct the defect in each eye, and an operation is necessary for the cosmetic effect, the same as in the higher degree of amblyopia.

In amblyopia exanopsia, I have seen many cases recover sharp vision in the amblyopic eye by proper treatment or use of the eye individually. I believe, of course, in immediate correction of the error of refraction. Regarding operative procedure, I prefer simple tenotomy.

Years ago I was accustomed to operate on both eyes at the same sitting; this I have abandoned, and now tenotomize the non-fixing eye and wait two or three months before deciding to tenotomize the fellow eye. The operation is more simple and the recovery is quicker.

Advancement I prefer in divergent cases, in paralytic cases, and in very high degrees of amblyopia. In the higher degrees of squint I favor Panas stitching previous to tenotomy. I

always make the subconjunctival operation, cutting the attachment of the caruncle to prevent sinking.

DR. P. J. LIVINGSTONE.—I have very much enjoyed this paper, particularly the splendid sketch the doctor has given of the History of Surgery of Squint. I am strongly in favor of treating amblyopic squinting eyes after operation by Worth stereoscopic practice. Much depends upon persistence and intelligence of the patient in this practice.

COCCYODYNIA. ERRORS IN DIAGNOSIS AND TREATMENT.*

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I wish to call your attention to an affection which is rarely alluded to in our systematic works at the present day, and a subject upon which medical literature is very meager.

While coccydynia is not met with in everyday practice, it does occur sufficiently frequent that it behooves every physician and surgeon to be alert to the most common as well as the remote symptoms.

I have been prompted to discuss the subject from the fact that it has been brought to my attention on several occasions, and particularly so, from the fact that this affection is so frequently overlooked and the patient treated for any one or more of several conditions; namely, the multitudinous diseases of uterus and appendages, with their complex symptoms, rectal diseases, cystic diseases, neuralgia, and rheumatism.

Perhaps this subject has been unintentionally overlooked in the broad field of medical and surgical science.

Dr. J. C. Mott, of Alabama, was first to suggest and perform the operation. This was in 1844.

Coccydynia or coxalgia is a painful affection situated at the end of the spinal column, and consists of a peculiar condition of the coccyx or the muscles attached to it, rendering their contraction and movements of the bone very painful.

The coccyx, you will remember, resembles a cuckoo's beak. It is formed of four smaller rudimentary vertebræ, and articulates with the sacrum, has attached to it the sphincter ani, gluteus maximus, and coccygeus muscles.

In Virchow's Archives of Pathology, an account is given of the discovery of a small reddish-yellow ovoid body, approximately the size of a hemp-seed, situated on the anterior surface of the end of the coccygeal bone, and embedded in fatty areolar tissue, connected by filaments from the ganglion impar of the sympathetic nerve, and with small branches of the arteria sacrales media, lying between the levator ani and the sphincter externis, and is known as the coccygeal gland or Luschka's gland, bearing the name of the discoverer and great anatomist.

This gland is rich in nerves, derived from the terminal branches of the sympathetic, which form a microscopic net-

*Read at the 45th Annual Meeting of the Michigan State Medical Society, Bay City, Sept. 28, 29, 1910.

work perforating the stroma, and occasionally seen connected with ganglion cells. The function of this gland is unknown, but is of great interest to the pathologist, because it is not only the seat of the so-called coccydynia, but also of the hygromate cystic perinealea, and known as the "glandula-coccygea of man." So far anatomists do not refer to this gland in women.

Simpson of Edinburgh says that he has never observed this condition in man, and my observations, also enquiries among my colleagues, support the statement of the great surgeon. In confirmation of this it might be well to quote Grant, who said, "The explaining, connecting and confirming the observations of our predecessors is more useful, and as honorable as hunting after new discoveries."

Men may have inflammation or necrosis of the coccyx from purely traumatic causes, which is analogous to coccydynia; but the disease under consideration comes from other causes than direct injury, and in many cases there is not the least indication of either inflammation or any form of disease of the bone substance. It is an affection more common in women than men, being more prevalent in those women who have borne children.

The pathology of coccydynia is, so far as I am able to determine, an unsolved problem, for the name does not define the pathology of the affection, simply meaning pain in the coccyx, same as we speak of myalgia, etc., to designate pain in the muscles wherever located.

It is a truth familiar to every one who meets with this condition, that these unfortunates suffer greater pain and inconvenience than from many other troubles. Coccydynia is not necessarily (as supposed by many) a spinal disorder, and is not infrequent; but this disorder consists of a peculiar complex condition

of the coccyx, or the muscles attached to it, thus rendering the contraction of the muscles and certain movements of the body highly painful.

It is an established law that whenever any chronic irritation is brought to bear upon a muscle, there follows a tendency to spasmodic contraction, and, as a result, acute pain is produced whenever an effort is made to elongate the contending muscles.

Before we proceed further, let us pass in review some of the common causes and pathologic conditions which are accountable for this pain.

Only a cursory consideration of the numerous causes can be given in this brief paper, and some causes I have intentionally passed in silence, as my remarks concern those types which are met with most commonly, leaving rare and anomalous types to those who desire to delve more deeply into the subject.

1. Osteo-necrosis, osteitis, cortical osteitis, following instrumental and normal delivery.

2. Bone abscess, due either to tuberculosis or syphilis.

3. Coccygeal dermal fistula (Morris).

4. Morbid condition of tendons of muscles attached to coccyx, also of surrounding fibrous tissues, and of nerve fibrils, and, lastly, morbid condition of glandula coccygea.

Pain is also produced as a consequence of habitual constipation, and where hardened feces are allowed to accumulate and press upon the affected coccyx.

Any point of irritation bearing on sensitive parts about rectum, vagina and bladder, such as fissure of anus and hemorrhoids, urethral caruncle, etc., would excite spasmodic and painful contractions of the sphincter muscles connected with the coccyx.

In some cases the coccyx is displaced

by fracture, or drawn to one side and possibly forward by irregular contraction of the various muscles attached to it; while in others there is no bone displacement, and ankylosis is present, leaving the coccyx entirely motionless. This last fact removes one surmise from the pathology, at least in the cases where the pain of coccydynia is produced by the pressure or friction of the end of the coccyx on a nerve.

The pain of coccydynia is usually of a decided sharp character, definitely localized, increased and greatly aggravated at first on arising, by walking, going up and down stairs, sitting on hard seats, by assuming erect position, riding in any vehicle, coughing, sneezing, vomiting, and urination; while defecation is attended with extreme suffering. These pains are at all times brought on and aggravated by any movement of body or lower extremities which bring into action any one or more of the muscles attached to the coccyx, as the sacro-sciatic ligament, the gluteal and coccygeal muscles, the sphincter and levator ani muscles. Menstruation is usually painful, and the distress is usually referred to the rectum.

It is true that these patients suffer almost constantly from pain and tenderness involving all the pelvic viscera.

Attitude alone is many times diagnostic of the existing condition.

Some patients sit on one hip or with one side resting upon a chair, and the dread of causing pain to the sensitive part makes them awkward and miserable. They are unable to sit or stand, and finally become bedridden. They are oftentimes compelled to support their persons with cushions, so that no pressure is allowed to injure the painful parts.

Another valuable diagnostic sign is the extreme mobility, especially when patient is under the influence of an an-

esthetic, and of the immobility of the supersensitive portion of the bone drawn forward by muscular action when not anesthetized.

Again there are cases where pain is not so aggravated; some will have pain with every step, while walking, and others can walk without any painful sensations.

Occasionally we find pain in this region with the young and unmarried, and with those who have never borne children, which is traceable to a direct injury inflicted by blow, kick, or fall, and certain forms of exercise, as bicycle and horseback riding.

The one most convincing proof that the pain of this disease is due to the action of muscles attached to the coccyx, and the only reason given hitherto for this affection being peculiar to the one sex, is, that in women there is greater development of the gluteal and other muscles attached to the coccyx, and this development is a necessary consequence of the greater size of the female pelvis.

I made the statement that error of diagnosis and treatment was common. And why?

As coccydynia has many symptoms in common with uterine, cystic, and rectal disease, it is not at all infrequent that an error of diagnosis is made, consequently an error of treatment.

The average practitioner who is busy, and who infers that all pain within the female pelvis must necessarily be uterine, tubal or ovarian, will find that he is laboring under an erroneous idea, particularly if he attributes the sacral suffering to the so-called sympathetic pains of these parts; and if, after a hurried and careless examination (possibly no examination at all), makes the proverbial so-called, offhand diagnosis.

We should make it a routine practice in the examination of every pelvis to

carry the examining finger or fingers posteriorly, and palpate the coccygeal region. Should this effort prove not to be satisfactory by the vaginal route, don't hesitate to make a careful rectal examination (not instrumentally but digitally), and by conjoined manipulation you can readily determine any pathological state of the coccyx, and thereby clearly differentiate coccydynia from all other disorders to which this region is subject.

For a number of years I have not allowed a case, complaining of pelvic pain, to escape from the table without a most careful examination of the rectum, and many times, to my great surprise, I have been rewarded by finding sufficient pathology to pay for the extra effort a hundred fold.

Don't neglect this procedure in those neurasthenic cases that are the bane of practice; many times you will be able to locate a trivial ailment that has been overlooked by your fellow associate.

I alluded to the analogy between the disease under consideration, fissure of anus and vaginismus.

In the latter affections irritation in the region of the muscles causes painful contractions, so the characteristic pain of coccydynia is in some cases produced in the same way.

For instance, an anesthetic overcomes the spasmodic contraction of vaginismus and fissure of the anus. Again, there is no pain in vaginismus or in fissure of anus when parts are at perfect rest, neither is there in coccydynia, but owing to the great number of muscles attached to the coccyx, a slight movement of body produces pain, because the movement involves their action, which facts are conclusive proofs that coccydynia is not a true neuralgia of coccyx.

From the time of Galen the laity have entertained, and many physicians have

fostered the idea, that surgery should only be considered after every other known or supposed method of treatment had proved futile, and somehow or other the majority of patients seem to have an overwhelming confidence in the recuperative power of nature and in drug action; and only after long weeks of suffering, endeavoring through the agency of local treatments, external applications, blisters, electricity, osteopathy, Christian Science, the quack advertiser, etc., meeting with disappointment at every turn, do they finally despair of being cured, and hope upon hope that the menopause will end their chronic discomfort.

Until recent years, people failed to recognize the salient fact that certain diseases and conditions were only curable, or at least permanently destroyed, by means of surgery.

Even to-day the majority are prejudiced against the surgical art, mostly because of fear and dread of the early hours of pain, and lastly from the financial consideration.

In the treatment of these cases don't resort to liniments, anodynes, either orally, by rectum, or per vagina; neither endermic injection of morphia nor any of the alkaloids of opium, for they afford only temporary relief and are very prone to create a drug habitué.

Don't leave the disease to nature, or think perhaps the climacteric will work some wonderful change, for you will certainly be deceived, as these patients gradually become worn out with pain, and the vigor of their constitutions which they formerly possessed gives way by reason of their inability to take exercise.

However, there remains to-day, from a medical standpoint, but one remedy which affords any possible hope of recognition in the treatment of this affection, and that is the injection of alcohol.

I suggest this as worthy of trial while temporizing or at least preparing your patient for the surgical work, which will undoubtedly become necessary in order to give relief.

Removal of whole of coccyx seems to me preferable to subcutaneous division of the attachments, because the former procedure removes all possible chance of the return of the disease, and but slightly increases the gravity of the operation.

By carefully separating the bone from all soft muscular and fibrous attachments, carrying the knife or scissors in close proximity to the bone, from above downward, and with volsella forcep lifting the lower segment upward and away from the bowel, dissect away all the remaining muscular attachments underneath upward as far as the coruna of the coccyx. This may be done with a curved blunt-pointed scissors; then disarticulate at junction with coccyx. There is seldom hemorrhage of any importance, as no vessels are encountered of sufficient size to require ligating. With removal of coccyx all muscular tension is relieved, and your patient experiences for the first time that long-looked-for absence from pain, and in a word says, she is well again.

So far as I know, removal of the coccyx is never followed by any unpleasant consequences.

Great care should be exercised, however, on the part of the operator else he might injure the bowel.

Every case has made an uninterrupted recovery, with marked improvement in general health, and entire cure of the coccydynia.

In conclusion I ask you to recall the fact that medical literature is not replete on the subject of coccydynia, that this paper relates to a subject difficult of investigation; hence I solicit your indulgence in criticism, and sincerely hope that a secret consciousness of error will inspire physicians to further their pursuit of knowledge along the study of this subject.

And it is to be hoped that the period is approaching when the wisdom of the medical profession will awaken to the fact of carefulness in diagnosis, and to this end should each and every one aspire, rather than allow the patient to drift aimlessly about, and exhibit the cheerless picture of a little wasted energy and time, on the part of the physician, to the end of correct diagnosis.

SURGICAL SUGGESTIONS

When acne of the back does not respond to treatment, try a few applications of long strokes with the Paquelin cautery. The results are often excellent.—*American Journal of Surgery*.

An intractable tuberculous cystitis that is not improved by silver nitrate most probably is associated with tuberculosis of the kidney, which causes reinfection.—*American Journal of Surgery*.

If a patient with acute gonorrhea is kept in bed on a restricted diet, the saving of time in the cure will amply repay him for the confinement.—*American Journal of Surgery*.

No operation for hemorrhoids should be done without a thorough examination of the heart and abdomen to discover etiologic obstructive conditions.—*American Journal of Surgery*.

The Journal of the Michigan State Medical Society

All communications relative to exchanges, books for review, manuscripts, advertising and subscriptions should be addressed to Wilfrid Haughey, A. M., M. D., Editor, 24 West Main Street, Battle Creek, Michigan. The Society does not hold itself responsible for opinions expressed in original papers, discussions or communications.

Subscription Price \$2.00 per Year, in Advance.

DECEMBER

EDITORIAL

Your Committee recommends, that on May first of each year the Journal of the State Society be discontinued to all subscribers and members in arrears and that such members be reported to the Secretary of the American Medical Association as "dropped for non-payment of dues."—*Report of Business Committee unanimously adopted by House of Delegates.*

A CENTURY MARK

This is the one hundredth number of the JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY.

The JOURNAL was first published in September, 1902, taking the place of the Volume of Transactions, and has appeared every month since then without a break in the record.

At the reorganization of the Michigan State Medical Society, in 1902, it was felt that the objects and aims of the enlarged and rejuvenated Society would be best attained by establishing an official means of intercommunication that could present our transactions the same as had been done before, and could also keep us in touch with our brother practitioners throughout the State, every month, instead of once a year. It was thought that the news of the various County Societies would be an aid in perfecting the organization of other County Societies, and in cementing more strongly together those already organized.

Illinois had already established an official Journal, which was meeting with

marked success. Michigan followed as the second State Medical Society to own its JOURNAL, and the success and popularity of the plan is well illustrated by the fact that there are now twenty-three State Society Journals, and another about to be established.

The membership of the Michigan State Medical Society has increased from less than seven hundred in 1902 to over twenty-one hundred in 1910, and the influence of the JOURNAL has been no small factor in this increase.

OUR PRESIDENTS

As a sort of celebration of our one hundredth birthday, so to speak, and as an inspiration for our members, we are reproducing in this number the likenesses of many of our ex-presidents. It has not been feasible to get them all, but there is not a member of the Society who will not recognize a friend and an inspiration in one or more of those we have secured. We had intended to give short biographical sketches of these men whom the Michigan State Medical Society has so signally honored, but owing to the few which we obtained, it has been decided to use only the pictures.

These men chosen year after year to preside over our councils, have come from all parts of the State, from all branches of practice, and have been men of more than average worth, beloved by their associates.

MICHIGAN STATE BOARD OF REGISTRATION IN MEDICINE

It is gratifying to note how many of our County Medical Societies have taken action favorable to the plan of the Michigan State Medical Society for the relief of the Michigan State Board of Registration in Medicine. Many have adopted resolutions favoring the plan and have appointed committees to wait upon their representatives and senators, and hundreds of members

have promised to interview these officials personally.

The Legislative Committee is hard at work preparing the amendments to the law to carry our plan into effect, and will have their work ready to present to the Council at its January meeting,—so that it can go to Lansing with the full backing of the Michigan State Medical Society, and fulfilling all our by-law requirements.

In the meantime it behooves us to see that all our County Societies take action on this measure, and also that all the representatives and senators are interviewed not once, but many times, in its favor. Let the Legislature know that the whole medical profession is in favor of this, and let them know it in no uncertain way, and the chances all are that success will be ours.

SMALLPOX IN SAGINAW

On October 17th and 18th, smallpox broke out in Saginaw. On those two days forty-five cases were reported in forty-five different families in different parts of the city. Up to November 7, one hundred and two cases had been reported, with twenty-six deaths.

Nearly all of the first forty-five cases were of the hemorrhagic and confluent type, and nearly all of the twenty-six deaths were from among these forty-five. Most of the cases reported since the first two days have been of the discrete type.

The source of the infection is unknown, but the occurrence of so many cases in such a short space of time and so widely distributed would seem to indicate that exposure occurred in some public place. All schools, theatres, churches, lodge halls and other places where people congregate are closed, and the strictest quarantine is enforced. Saginaw has a modern up-to-date Detention Hospital, built three years ago, at a cost of ten thousand dollars, and capable of accommodating thirty patients. In or-

dinary epidemics this would suffice, but in this one it has been necessary to quarantine many in their homes.

General vaccination has been ordered and has met with popular favor, forty thousand being vaccinated during the three weeks. Members of the families where the first forty-five cases occurred were immediately vaccinated and quarantined, and while some have contracted the disease, it has always been of the mild, discrete type.

Briefly, the points of especial interest are:

I. There have been no severe cases among patients who had been vaccinated in the past ten years.

II. Few cases in new families after quarantine was established.

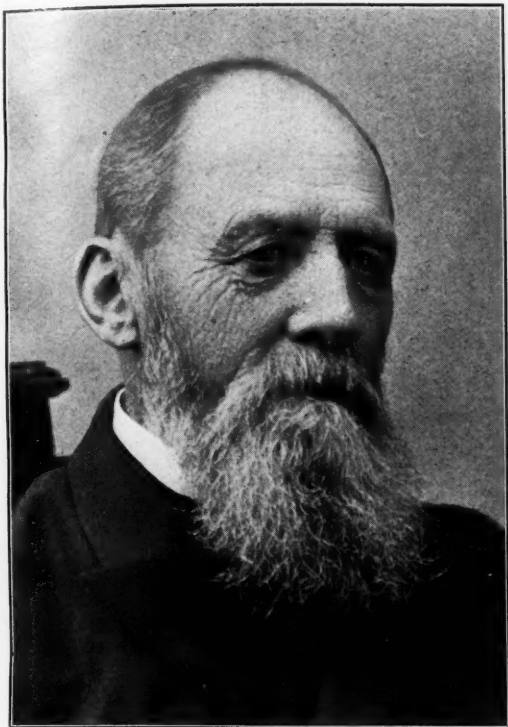
III. Readiness with which the people responded to the call for general vaccination.

IV. Vaccination "worked" on people who had smallpox previously.

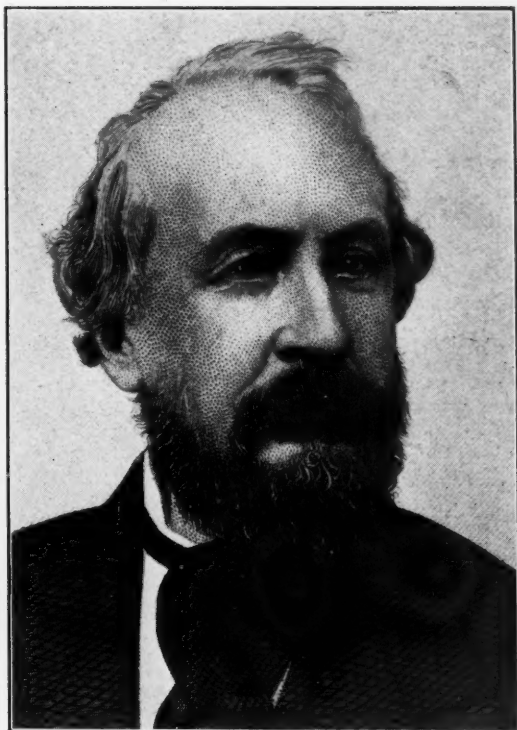
(This last fact shows a mistaken diagnosis, or that smallpox may not always produce immunity, or that immunity to smallpox does not mean also immunity to vaccina.)

Not since 1892 have we had a severe epidemic of confluent or hemorrhagic smallpox. Since then our smallpox epidemics have been so mild that the people have begun to doubt the danger or severity of smallpox, and to distrust, to an extent, the precautions sanitarians have taken to prevent it. This feeling will receive a severe shaking up from the present epidemic in Saginaw, for once again have we been visited with genuine old-time smallpox, with a mortality of about 50% among the cases reported the first couple of days, and of 25% during the first three weeks of the epidemic,—the period covered by the report of our correspondent from which our data was taken.

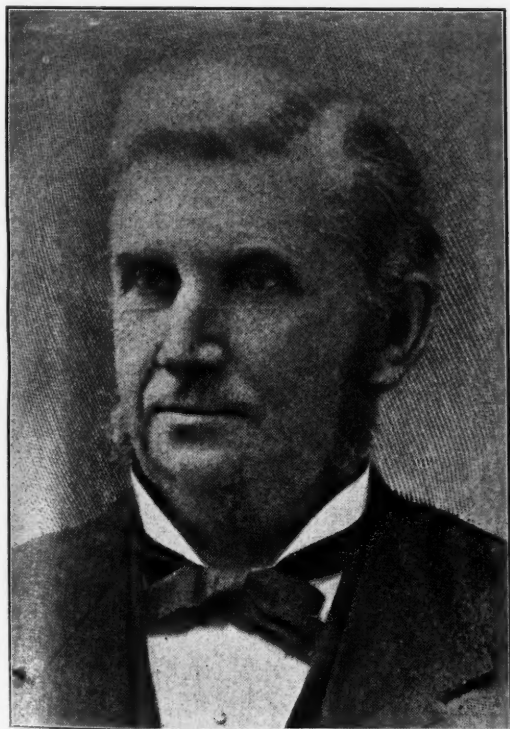
Saginaw is to be congratulated upon its general vaccination, for this will tend to



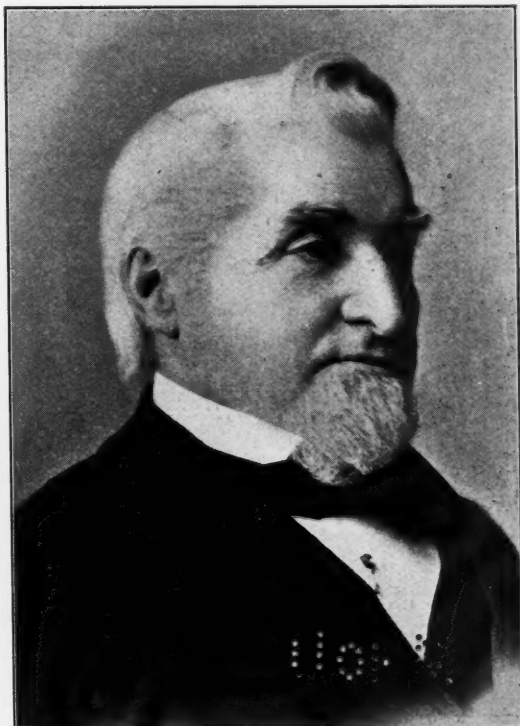
DR. C. M. STOCKWELL, Port Huron
President, 1866



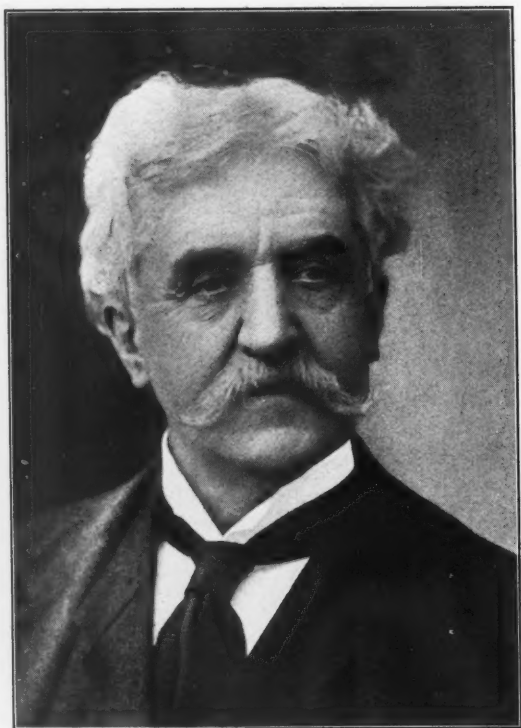
DR. RICHARD INGLIS, Detroit
President, 1869



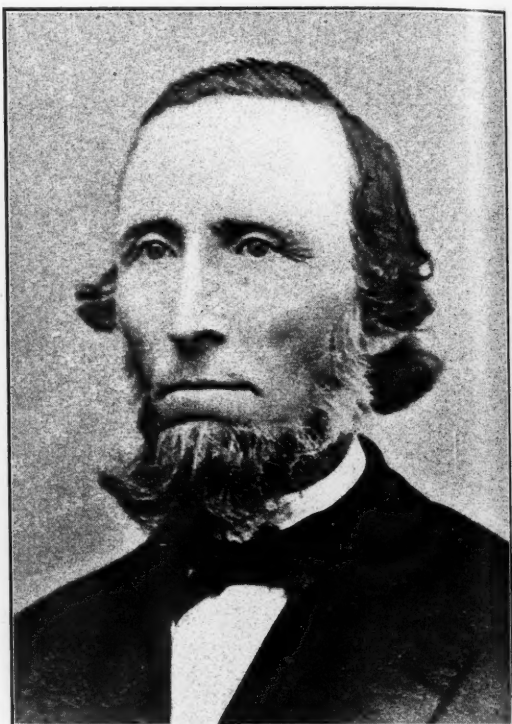
DR. H. O. HITCHCOCK, Kalamazoo
President, 1871



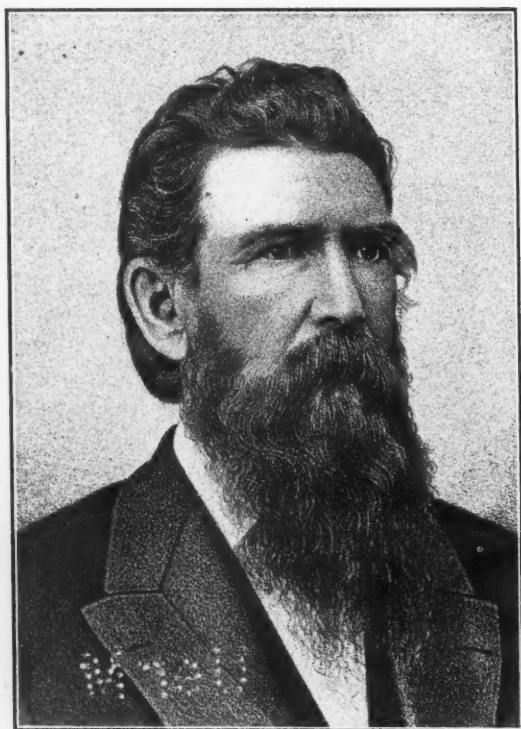
DR. A. B. PALMER, Ann Arbor
President, 1872



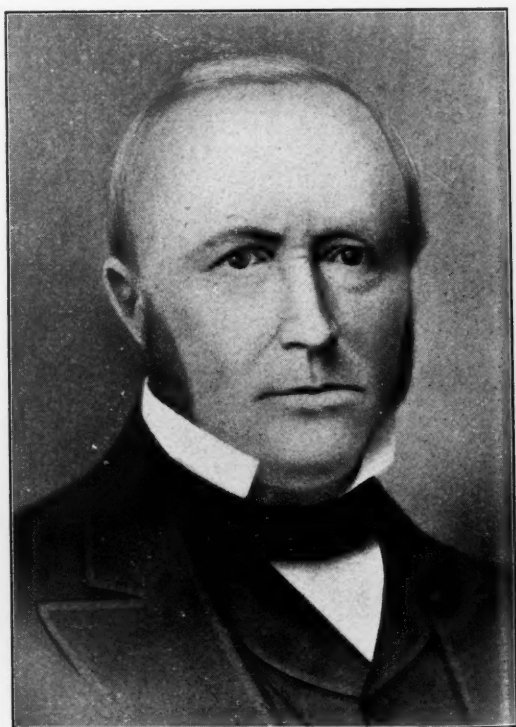
DR. E. W. JENKS, Detroit
President, 1873



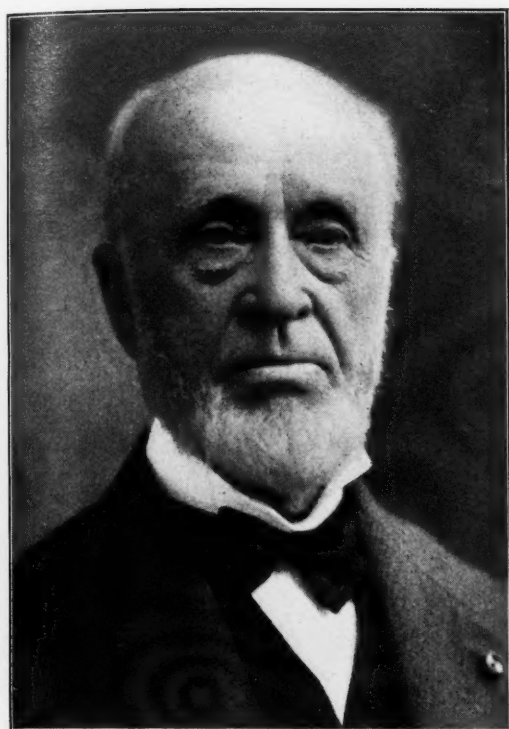
DR. ABRAM SAGER, Ann Arbor
President, 1876



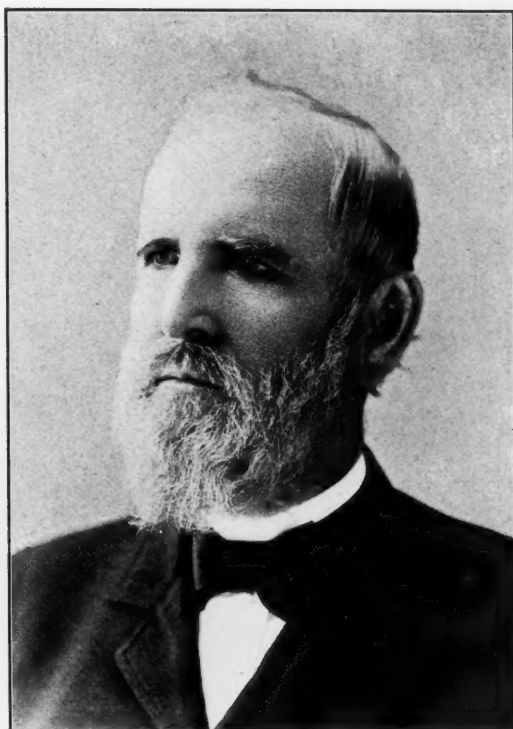
DR. FOSTER PRATT, Kalamazoo
President, 1877



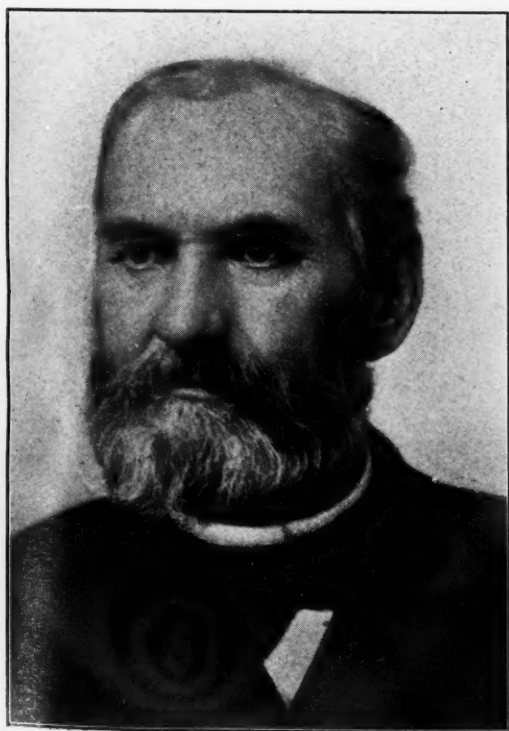
DR. EDWARD COX, Battle Creek
President, 1878



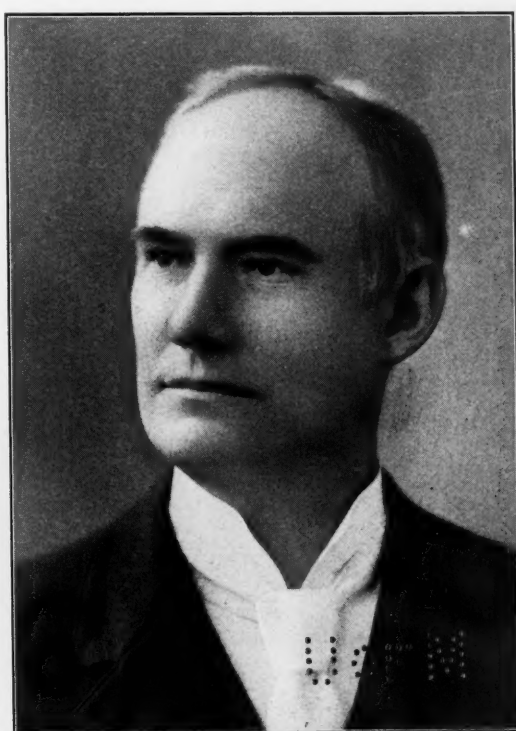
DR. GEORGE K. JOHNSON, Grand Rapids
President, 1879



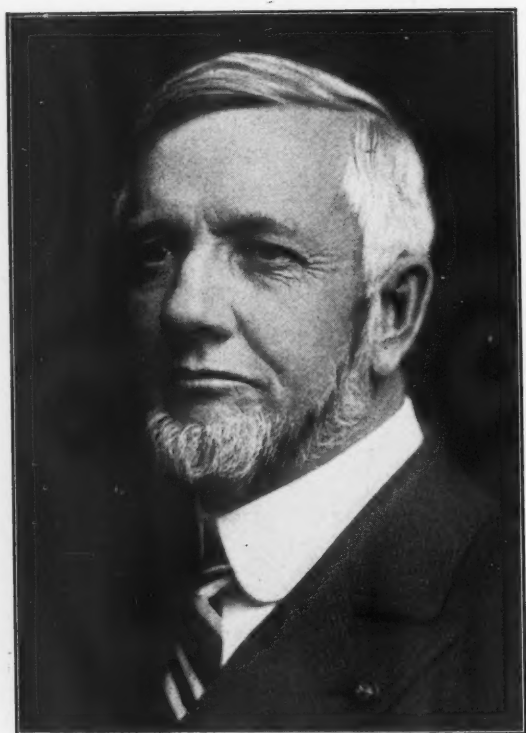
DR. G. W. TOPPING, De Witt
President, 1882



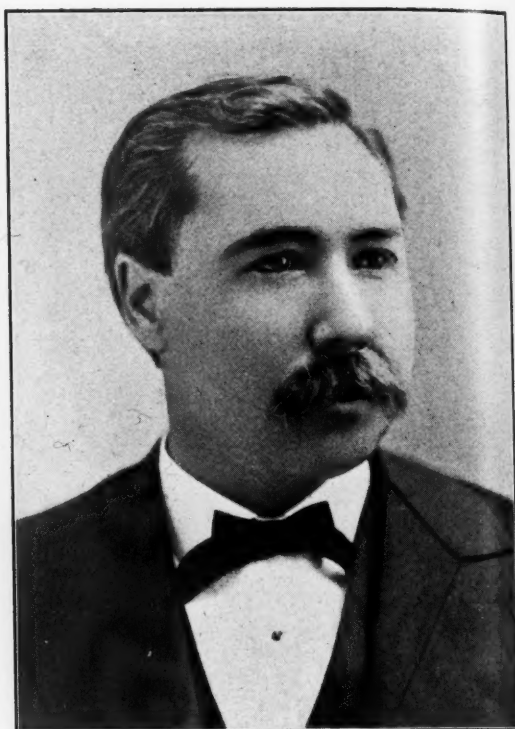
DR. A. F. WHELAN, Hillsdale
President, 1883



DR. DONALD MACLEAN, Detroit
President, 1884



DR. T. A. McGRAW, Detroit
President, 1887

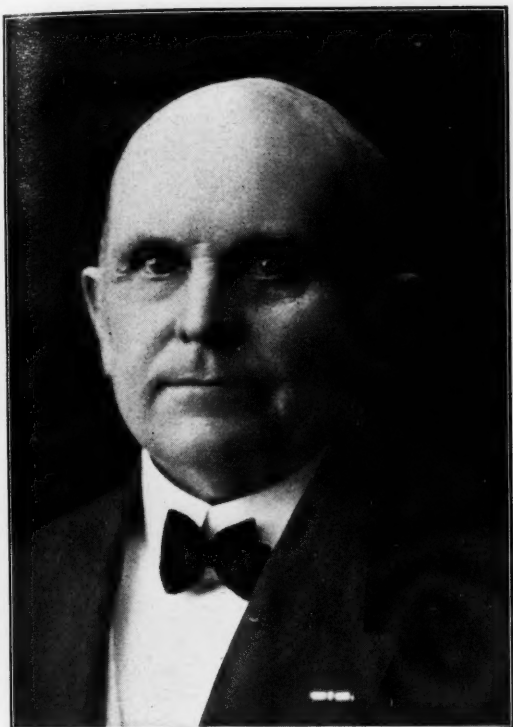


DR. G. E. FROTHINGHAM, Detroit
President, 1889

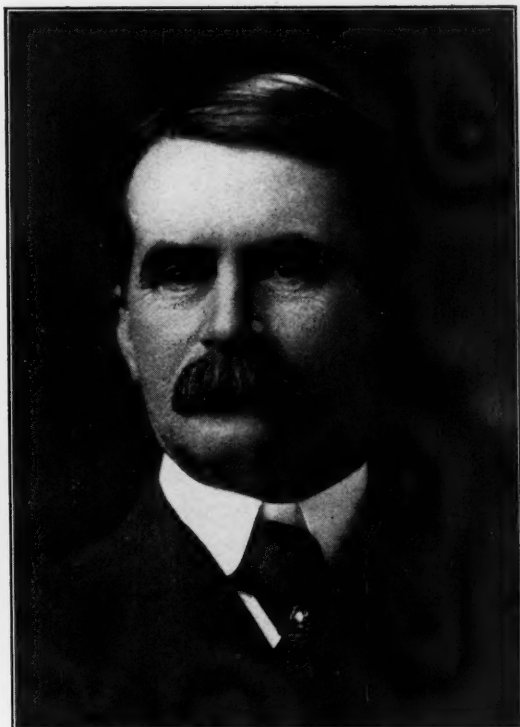


DR. S. S. FRENCH, Battle Creek
President, 1888

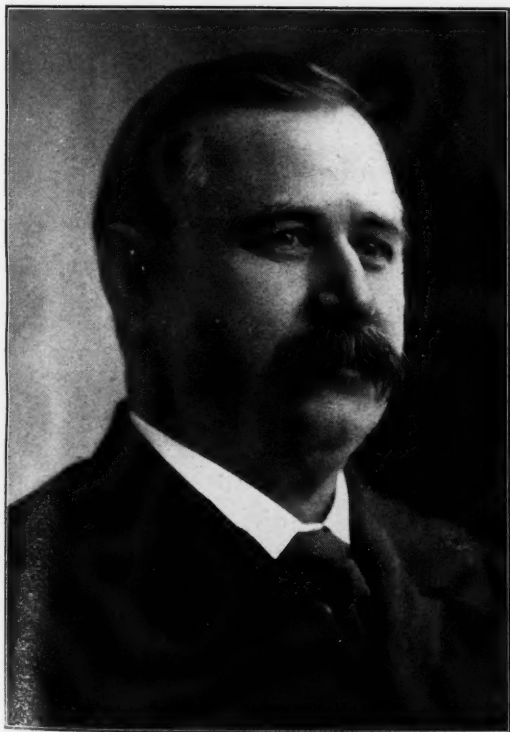
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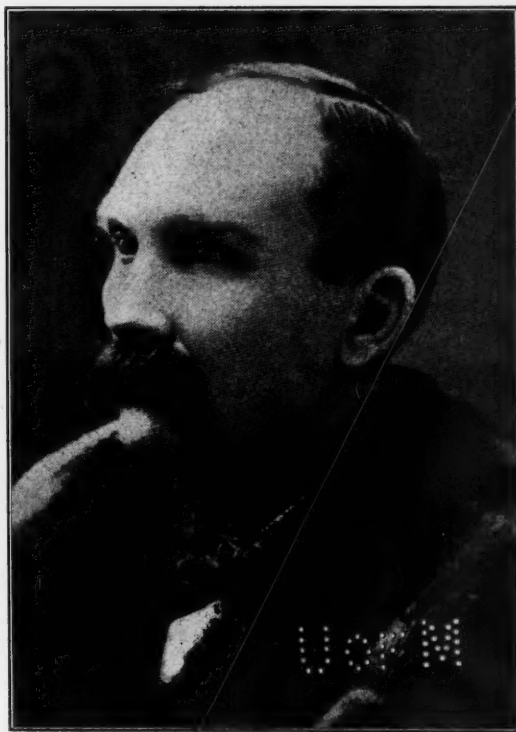
DR. GEO. E. RANNEY, Lansing
President, 1891



DR. EUGENE BOISE, Grand Rapids
President, 1893



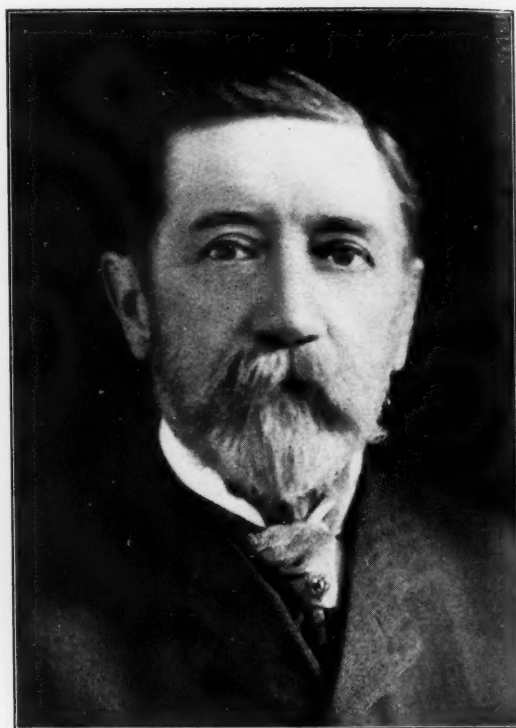
DR. VICTOR C. VAUGHAN, Ann Arbor.
President, 1895



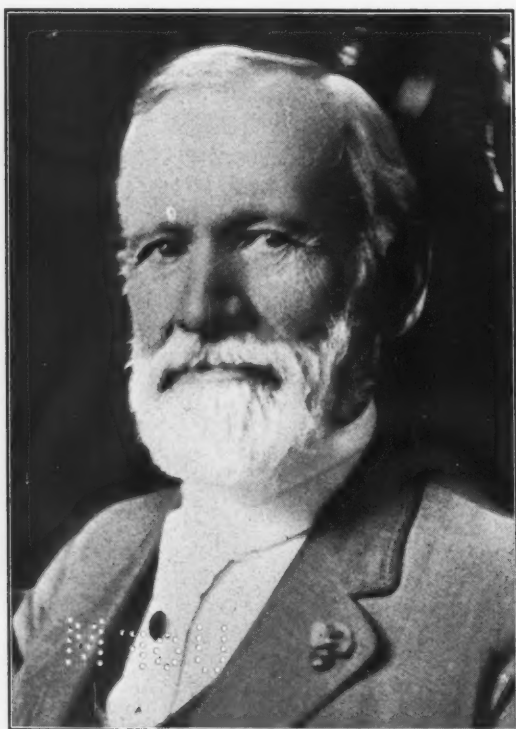
DR. HUGH Mc COLL, Lapeer
President, 1896



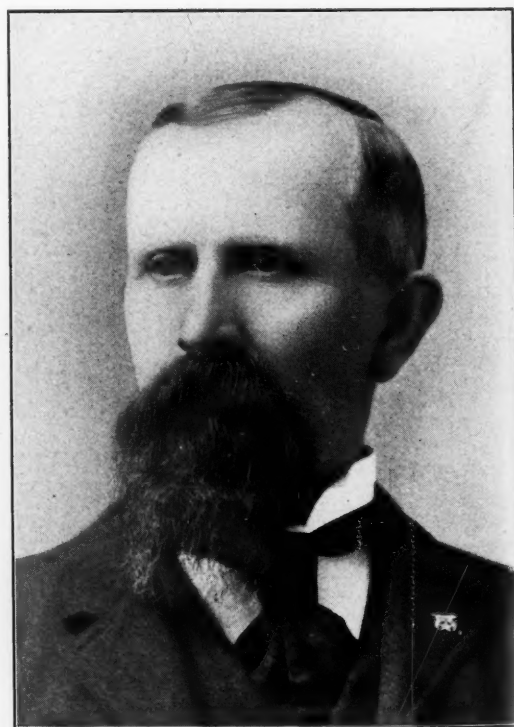
DR. J. B. GRISWOLD, Grand Rapids
President, 1897



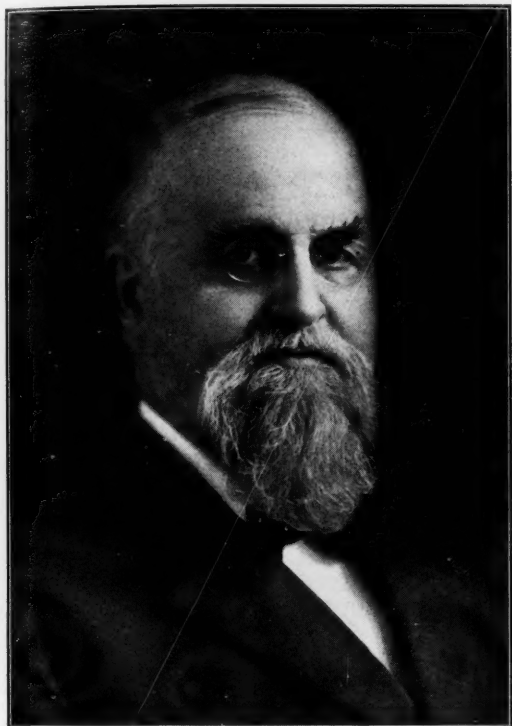
DR. E. L. SHURLY, Detroit
President, 1898



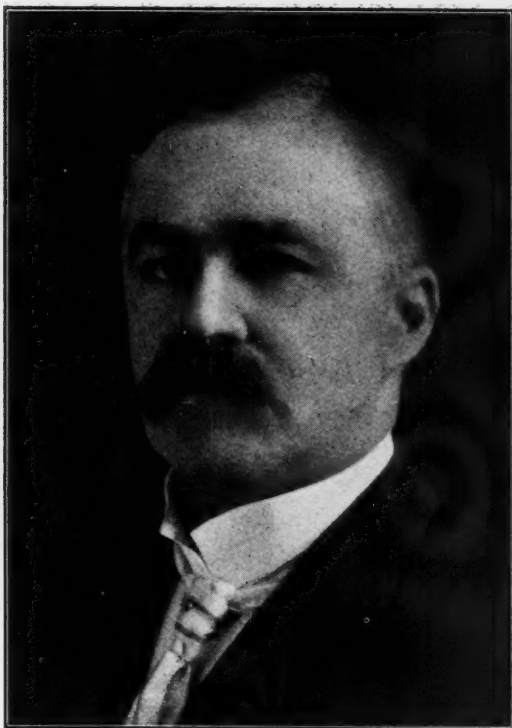
DR. A. W. ALVORD, Battle Creek
President, 1899



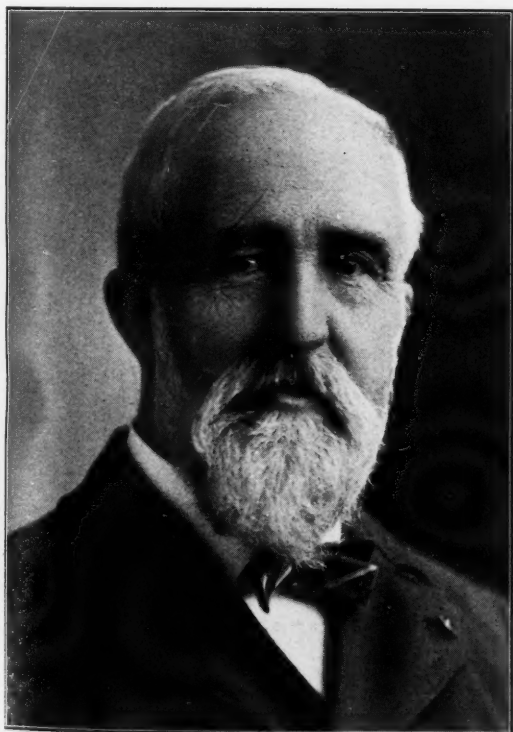
DR. P. D. PATTERSON, Charlotte
President, 1900



DR. LEARTUS CONNOR, Detroit
President, 1901



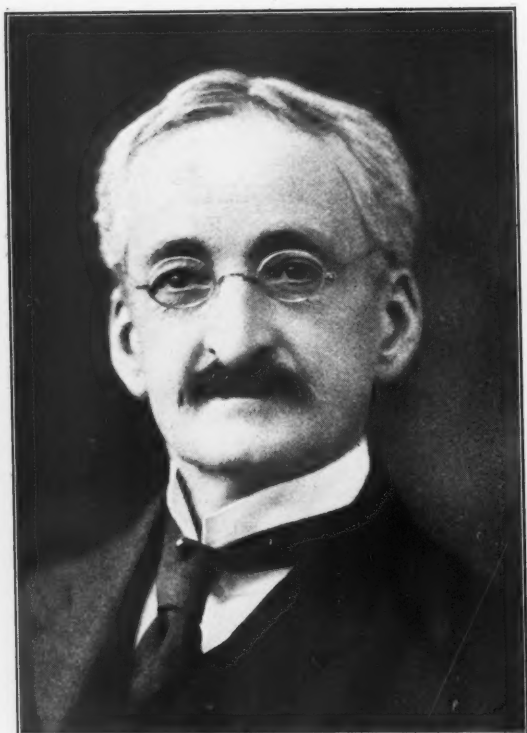
DR. A. E. BULSON, Jackson
President, 1902



DR. W. F. BREAKEY, Ann Arbor
President, 1903



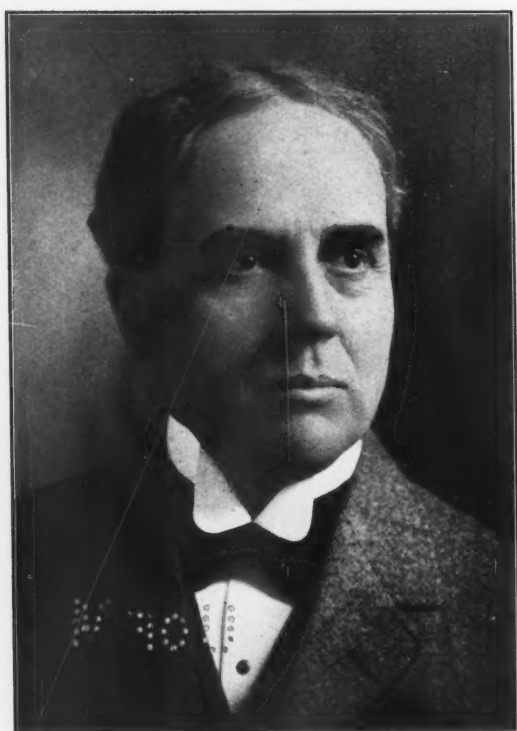
DR. B. D. HARISON, Sault Ste. Marie
President, 1904



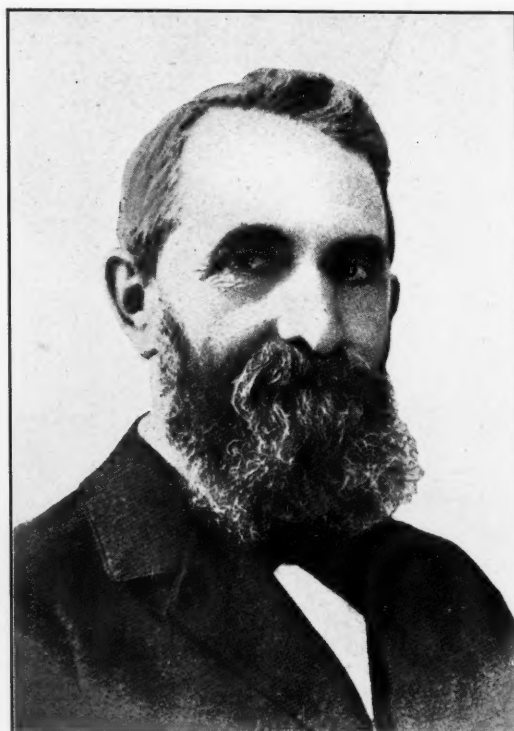
DR. DAVID INGLIS, Detroit
President, 1905



DR. C. B. STOCKWELL, Port Huron
President, 1906



DR. HERMAN OSTRANDER, Kalamazoo
President, 1907

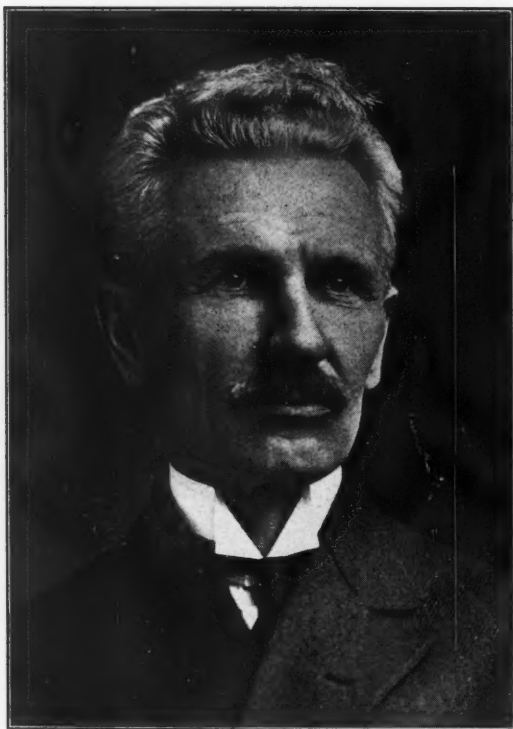


DR. A. I. LAWBAUGH, Calumet
President, 1908



DR. J. H. CARSTENS, Detroit
President 1909





DR. C. B. BURR, Flint
Presideat, 1910

1910

preclude another outbreak from cases of delayed incubation, as sometimes occurs.

(Forty-three deaths reported up to November sixteenth.)

COUNTY SOCIETY REPORTS

The Department of County Society News is one of the most important in the JOURNAL. Through this department do we learn what is being done by the organized profession in its various Branches.

This department should be made even more valuable than it is. There are many papers read before County Societies that contain some thought worth expressing to the whole State. Papers of merit should be sent to the JOURNAL for publication, and the report of the County Society meeting would be of more scientific interest if the leading topics of the papers were presented in a few well-chosen words. New ideas brought out by the discussion are also valuable material for this department.

Early in the year we promised to make a summary in the December number of all the counties represented in the department of County Society News during the year. As will be seen by this summary, which follows, 43 of our 57 counties were so represented with a total of 108 reports; 78 original articles have been published from 19 counties.

	Co. Soc. Reports.	Orig. Art.
Alpena.....	0	0
Antrim.....	1	0
Barry.....	0	0
Bay.....	2	0
Benzie.....	0	0
Berrien.....	1	0
Branch.....	2	1
Calhoun.....	3	3
Cass.....	0	0
Cheboygan.....	0	0
Chippewa.....	4	0
Clinton.....	1	0
Delta.....	1	0
Dickinson.....	0	1
Eaton.....	2	0
Emmett.....	0	0
Genesee.....	1	1
Gogebic.....	0	0
Grand Traverse.....	10	3
Hillsdale.....	2	1
Houghton.....	3	4

	Co. Soc. Reports	Orig. Art.
Huron.....	4	1
Ingham.....	3	3
Ionia.....	3	0
Isabella.....	1	0
Jackson.....	0	1
Kalamazoo.....	5	4
Kent.....	3	8
Lapeer.....	1	0
Lenawee.....	1	0
Livingston.....	0	0
Macomb.....	0	0
Manistee.....	1	0
Marquette.....	3	0
Mason.....	1	0
Mecosta.....	1	3
Menominee.....	1	0
Midland.....	0	0
Monroe.....	1	0
Montcalm.....	5	0
Muskegon.....	9	3
Newaygo.....	1	0
Oakland.....	2	0
O.M.C.O.R.O.....	2	1
Ontonagon.....	1	0
Osceola.....	1	0
Ottawa.....	8	0
Presque Isle.....	0	0
Saginaw.....	0	0
Sanilac.....	1	0
Schoolcraft.....	1	1
Shiawassee.....	2	0
St. Clair.....	2	0
St. Joseph.....	3	2
Tri-County.....	1	0
Tuscola.....	2	0
Washtenaw.....	0	6
Wayne.....	5	31
	108	78

IN MEMORIAM

Leroy Lewis, M. D., Jefferson Medical College, Philadelphia, 1878; a member of the American Medical Association; for twenty years surgeon in charge of Lewis Hospital, Bay City, Mich.; died at his home in South Bend, Ind., October 27, from cancer of the neck, aged 55.

Edgar R. Knapp, M. D., University of Michigan, 1856; surgeon in the Federal service during the Civil War; died at his home in Saginaw, Mich., October 19, from epilepsy, aged 76.

David Rogers (license, Michigan, under years practice, 1900); for over forty years a practitioner of Millington, Mich.; died October 28, from cancer, aged 77.

COUNTY SOCIETY NEWS

BRANCH

The regular quarterly meeting of the Branch County Medical Society was held at Coldwater on Tuesday, October 18, 1910, in the Court-house, President Hancock presiding. Eleven members were present.

Minutes of the last meeting were read and approved. Communications from the State Secretary were read. The one relating to the lack of funds with which to carry on the work of the Board of Registration required action. A committee consisting of Drs. Griffith and Howe was appointed by the chairman to interview our State Senator and Representative, and urge the passage of suggested bill. The President also urged each member to work and use his influence for the passage of such a bill.

Dr. Frank C. Kinsey, of Grand Rapids, was the guest of the day, and read a very interesting and practical paper on "Cause and Relief of the Gall Stone Pain." The Society extended a vote of thanks to Dr. Kinsey for his excellent paper.

Dr. Ray Whitmore gave a very exhaustive paper on "Blood Pressure."

Dr. A. G. Holbrook read a paper on "Poliomyelitis," and presented a case showing the extent of paralysis after recovery of acute attack.

Every paper was thoroughly discussed by the members present.

A motion to hold the next meeting at Coldwater was carried.

S. SCHULTZ, *Secretary*.

CHIPPEWA

The regular monthly meeting of the Chippewa County Medical Society was held at the Park Hotel November 1, President C. J. Ennis presiding. Dr. Fred Townsend read a paper on "Gastric Symptoms Produced by Surgical Conditions," and there was a general discussion relative to the position the State should occupy towards the Board of Registration. When the law creating the board was enacted by the Legislature it was the intention and belief that the fees would be sufficient to maintain the board. For the first few years this was the case. All the old physicians in the State were applying for registration as well as the graduates from colleges, and as a

result there was plenty of money on hand to meet the current expenses and prosecute offenders. But there has been a gradual falling off in the applicants, until whereas there were formerly as many as 600 to register in a year, now there is rarely to exceed 150. The matter has been subject for discussion among the medical societies all over the State, and doctors are in favor of having the State bear the expense of maintaining the board without having to depend alone on the fees collected for registration. The local Society went on record as favoring the change.

The next meeting of the Society will be held the first Tuesday in December, when officers for the ensuing year will be elected.

CLINTON

At its annual meeting at St. Johns the Clinton County Medical Society elected the following officers:

President, W. A. Scott, St. Johns.

Vice President, E. L. Martin, Maple Rapids.

Secretary, J. E. Taylor, Ovid.

Dr. M. Weller was elected delegate to the State Society, Dr. F. C. Dunn, alternate.

JAMES E. TAYLOR, *Secretary*.

GENESEE

At the annual meeting of the Genesee County Medical Society, held October 25th, the following officers were elected:

President, Dr. Noah Bates.

Vice President, Dr. M. S. Knapp.

Secretary and Treasurer, Dr. C. P. Clark.

Ass't Secretary and Treasurer, Dr. F. B. Miner.

Delegate State Medical Society, Dr. H. E. Randall.

Alternate, Dr. J. W. Handy.

Member of Medico-Legal Committee, Dr. H. R. Niles.

Member of Board of Directors, Dr. Abraham Goodfellow.

At the conclusion of the business meeting Dr. H. E. Randall read a very interesting paper on "Diseases of the Thyroid Gland." Dr. E. D. Rice presented a case of Exophthalmic Goitre, and the discussion was led by Dr. J. R. Manwaring.

The Society voted to send a letter to the

Senator and Representative of Genesee County District, requesting them to further and support the bill, now under preparation by the Legislative Committee, asking for an appropriation for the maintenance of the Michigan State Board of Registration in Medicine.

C. P. CLARK, *Secretary*.

GRAND TRAVERSE

The annual meeting of the Grand Traverse-Leelanaw County Medical Society was held Tuesday, November 1, at Dr. Miner's office. The election of officers for the ensuing year was held with the following result:

President, Dr. Miner.

Vice President, Dr. Holdsworth.

Secretary and Treasurer, Dr. Wells.

The Treasurer's report was read and approved. Two letters from the State Secretary were read, one regarding dues, the other regarding the present condition of the State Board of Registration.

It was moved and seconded that a committee of two, with the Secretary, draft resolutions regarding the State Board of Registration, and send same to the prospective candidate for the State Legislature. Carried. Dr. Chase and Dr. Holdsworth were appointed on this committee.

Dr. Miner read a very interesting paper on "Radiotherapy," citing cases in his practice that had been cured or benefited by the X-rays. A general discussion followed.

It was decided to meet at Dr. M. S. Gregory's office next time.

Dr. W. D. Mueller, the retiring President, then invited the members to the Elks Club, where an Italian supper was served.

R. E. WELLS, *Secretary*.

HILLSDALE

The annual meeting of the Hillsdale County Medical Society was held at the Court-house, Hillsdale, October 28.

Dr. F. C. Martindale was elected President, and B. F. Green re-elected Secretary.

Several clinical cases were presented, one of a swelling on the angle of the lower jaw, for diagnosis, and three of infantile paralysis.

Dr. H. C. Miller read a paper on "Infantile Paralysis," reviewing the history of the disease and the literature and reporting several cases. The first cases to occur around Hillsdale were in young adults, and were very severe,—taking the victim off in three or four days. Since then the attacks have not been so severe, and have occurred in all ages, the oldest being a lady of

seventy years. Dr. Miller presented a little girl just regaining the use of her legs, so that she can with difficulty take a few steps, also two boys, brothers, who walk with a slight halt.

The discussion brought out the fact that this disease has recently been quite prevalent in Hillsdale, but rare in other parts of the State.

Dr. Green read a paper on "Intestinal Infection of Infants," advocating close attention to the diet of infants and outlining the care that should be given to the milk. Practically all cases of intestinal infection of infants occur in bottle babies.

Dr. A. E. Bulson, of Jackson, advocated medical inspection of schools, and told what had actually been done in this direction.

Dr. Willard Chaney, of Detroit, gave an entertaining talk on the "Uses of Carbon Dioxide in Medicine," and spoke of the Nauheim baths, the carbon dioxide baths, and carbon dioxide snow.

Dr. Wilfrid Haughey, State Secretary, Battle Creek, spoke on Organization Matters and the *Journal*.

Two new members were elected.

B. F. GREEN, *Secretary*.

IONIA

The Ionia County Medical Society held its eighth annual convention in Ionia, on Thursday, October 27, with the following as the program. Banquet at Hotel Bailey at 12.30, smoker, speeches, official reports, miscellaneous business, election of officers, presentation of paper by Dr. S. C. Graves, of Grand Rapids, entitled "Genu Valgum," with some observations on corrective osteotomy.

Dr. Graves' paper was listened to with great attention, and upon conclusion of the reading was most thoroughly discussed. A vote of thanks was accorded the visiting speaker, and the Secretary was instructed to forward the paper to the State Medical *Journal* for publication.

The election of officers resulted in the choice of the following named:

President, Dr. W. J. Wilkinson, of Orleans.

First Vice President, Dr. T. R. Allen, Ionia.

Second Vice President, Dr. J. J. McCann, Ionia.

Third Vice President, Dr. F. M. Martin, Portland.

Fourth Vice President, Dr. F. A. Hargrave, Palo.

Secretary-Treasurer, Dr. C. S. Cope, Ionia.

Censors, Drs. C. B. Gauss, Palo, E. F. Beckwith, Ionia, and Geo. A. Stanton, Belding.

Delegate to State Society, Dr. Cope; alternate, Dr. McCann.

Member of Medico-Legal Committee, Dr. W. L. Barnes, Ionia.

C. S. COPE, *Secretary*.

KENT

Kent County Medical Society met Wednesday evening, October 12th, President R. R. Smith in the chair.

Dr. Collins H. Johnston reported a case of gonorrheal arthritis treated with vaccine with rapid recovery. He reported two cases of epidemic cerebro-spinal meningitis, diagnosis confirmed bacteriologically, treated with Flexner's serum, one case showing clinical cure inside of twenty-four hours, the other improving less rapidly under its influence.

Dr. A. J. Baker read a paper on "Hemorrhagic Disease of the Newborn," citing three cases, one starting with gastric hemorrhage, one with hematoma under scalp. He showed the difference from hemophilia, which is rare in the first year of life. Burnham's experiments with dogs were quoted, in which clotting time was reduced from four minutes to one with saline extract of the aorta. The probable cause of the disease was stated as imperfect coagulability, due to lack of blood vessel wall secretion. Rational treatment would be, therefore, to introduce fresh blood serum and so supply blood containing coagulable ferments.

Dr. Baker reported cases of Welsh and Lambert, of New York, treated successfully by direct transfusion; also one of his own cases treated with 10cc horse serum with recovery.

Dr. J. D. Hastie reported two cases of Schwartz and Auchenberg treated unsuccessfully with horse serum, but yielding to direct transfusion.

Dr. J. B. Whinery mentioned the low platelet count, which has been known to fall below six thousand, improvement following transfusion.

Dr. A. M. Campbell read a paper on "Spinal Anesthesia," remarks based on personal experience and on observations at Bier's clinic. He frankly admitted a 10 percentage of failures; but urged its use where inhalation anesthesia is contraindicated. Due credit was given to Dr. Leonard Corning of New York, as the originator of the method in 1885, although Bier and Jonesco may be said to have popularized it. Dr. Campbell advises tropacocaine solution. Dr. Rowe, in discussion, cited twenty-three cases.

Dr. Dingman quoted McCardie's mortality estimate one in eight hundred and twenty-six, as based on twenty-four thousand cases collected in the literature. Fear was stated as the chief contraindication.

Kent County Medical Society met Wednesday, October 26, Vice-president Brooks in the chair.

Dr. R. J. Hutchinson presented a paper "Remarks on Imperforate Anus," reporting two cases. This defect occurs ten times in 73,000 cases, according to statistics, at which rate Grand Rapids might be expected to show one case in five years. Examination reveals the defect; its chief symptom is vomiting,—appearing more or less rapidly according to the height of obstruction. Surgical treatment in both cases. One patient well after four years. One patient died after two weeks, post mortem not obtainable.

Dr. Wenger reported a case where the stomach ended in a blind pouch, vomiting occurring within ten hours.

Dr. DuBois cited two cases.

Dr. Reuben Peterson, of Ann Arbor, before presenting his paper, took occasion to praise the bulletin idea as a valuable aid in maintaining a wide-spread interest in society meetings.

In opening his subject, "The Present Status of the Cure of Cancer of the Uterus by Radical Abdominal Hysterectomy," he referred briefly to the old Freund operation, originated in the late '70s, in which hysterectomy was done without removal of parametrium and glands. Later followed vaginal hysterectomy and its enthusiastic reception, although statistics have shown a scant 4% of cures, a cure being practical if five years elapse without recurrence. Then appeared Halstead's brilliant teachings of removing glands, muscle and everything involved in breast cancer. Finally, in 1895, Emil Reis advised removal of parametrium and pelvic glands, as well as uterus, for uterine cancer. It must be here remarked that Dr. Eugene Boise suggested the logic of such a procedure some two or three years previously at a Michigan State Medical Society meeting, 1892. Although fifteen years have elapsed since Reis' first paper, Jacobson, of Toledo, could collect only some three hundred cases in America. The distinct disfavor is due (a) to the high primary mortality; (b) to the lack of experience with this operation; and (c) to the lack of teaching the laity regarding cancer, as is done in Germany, by public campaign, and consequently the late appearance of cancerous patients to surgeons for treatment.

Jacobson estimates that thirty-five per cent. of those cases presenting themselves to American surgeons are operable, whereas in Germany the percentage is estimated at sixty-five. Exploratory incision is often required to determine if operation is indicated, because, for instance, of obesity, old inflammatory adhesions, or broad ligament involvement.

The dangers of the operation lie in tying the uterine artery external to the ureter, freeing and lifting the ureter from its bed, excising the vaginal wall partially, tediousness of the operation, especially in removing glands, advanced age, and septic or debilitated condition of patient.

These causes mean a high primary mortality. Wertheim in over four hundred cases reports ten per cent. mortality. But in contrast reports six hundred and twenty-seven cured. Peterson lost six of his first fourteen cases, but only four of the succeeding twenty-nine cases. Only twelve were operated on over five years ago, five died, four are now well, three show recurrence, due, Peterson believes, to faulty technique as indicated by the recurrence in the vaginal scar.

It is almost impossible to remove the high pelvic glands. Peterson found metastasis in only four of twenty-one cases. Wertheim removes only those which are enlarged, Reis tries to remove all.

Contraindications are (a) obesity because of cardiac changes and pressure on the diaphragm when patient is in Trendelenburg position; (b) marked degrees of anæmia or sepsis.

Causes of death are shock, hemorrhage, peritonitis, and embolism.

Lantern slides of exceptional merit—the work of Dr. E. P. Billings—completed the paper.

Discussion followed by Drs. Bigham, Veenboer, Parkhurst, Boise, Rowe, Fuller, and Peterson.

H. W. DINGMAN, *Correspondent*.

MASON

By invitation of the Mason County Medical Society, the Muskegon-Oceana and Manistee County Societies met with them in Ludington, Tuesday afternoon, October 11.

Dr. B. H. McMullen, councilor for the ninth district, and Dr. Munson, of the Northern Michigan Asylum, were present as guests of honor, and gave some very interesting papers.

A banquet was served in the Steams Hotel, to which some thirty-five sat down. After the banquet a short business session was held by the Mason County members, and the following officers elected for the ensuing year:

President, Dr. W. H. Heysett, Ludington.

Secretary and Treasurer, T. J. Foster, Scottville.

W. C. MARTIN, *Secretary*.

MONROE

The fifteenth annual meeting of the Monroe County Medical Society was held in Monroe, on October 20. Dr. Ballin, of Detroit, gave a most

interesting talk on "Surgery of the Thyroid," and Dr. Acker, of Monroe, a paper on "Puerperal Eclampsia."

Election of Officers resulted as follows:

President, P. S. Root, of Monroe.

Vice President, E. M. Cooper, Carleton.

Secretary-Treasurer, Chas. T. Southworth, of Monroe.

The President was instructed to confer with the candidates for Legislature and Senate to ascertain their feeling towards support of Board of Registration, and to notify all physicians in this District of their standing in this matter. Our meetings are growing better every year. There are still many physicians in the county who will not attend meetings, but we hope to get them interested before long. It is their loss, not ours.

CHAS. T. SOUTHWORTH, *Secretary*.

MONTCALM

Our annual meeting, of October 13, was a hummer, nearly all of our members being present and some visitors.

Dr. H. A. Freund, of Detroit, read a very carefully prepared paper on "The Diagnosis and Treatment of Cardiac Affections."

* Dr. J. B. Whinery, of Grand Rapids, read a paper of much interest on the "Influence of Heredity on Disease."

Dr. Richard R. Smith, of Grand Rapids, presented a paper on "Subinvolution of the Uterus, its Pathology and Treatment." This was illustrated with lantern slides. These papers were well discussed.

The following officers were elected for the ensuing year:

President, Dr. J. Odell Nelson, Howard City.

First Vice President, Dr. E. M. Highfield, Edmore.

Second Vice President, Dr. W. H. Belknap, Greenville.

Third Vice President, Dr. W. A. Lee, Sheridan.

Fourth Vice President, Dr. L. E. Kelsey, Lakeview.

Secretary and Treasurer, Dr. H. L. Bower, Greenville.

At the close of the meeting all repaired to Hotel Phelps, where a fine lunch was served.

H. L. BOWER, *Secretary*.

MUSKEGON-OCEANA

Regular meeting of the Muskegon-Oceana County Medical Society was held at the residence of Dr. W. L. Griffin, Shelby, Michigan, October 7

1910, at 4 P. M. Members present: Doctors W. L. Griffin, J. D. Buskirk, W. E. Dockry, J. H. Nicholson, L. W. Keyes, J. M. VanderVen, J. F. Denslow, R. G. Olson, I. M. J. Hotvedt, F. Garber, C. P. Donelson, A. A. Smith, W. P. Gamber, Jacob Oosting, F. B. Marshall and J. T. Cramer. Dr. Stone, of Ferry, and Dr. Reetz, of Shelby, were present as guests of the Society. Minutes of previous meeting were read and approved as read.

Report of Dr. Marshall, as delegate to the State meeting at Bay City, was given. He announced that the next State meeting would be at Detroit, but thought Muskegon would get it in 1912. On motion of Dr. Olson, the Secretary was instructed to invite Dr. Peterson, of Ann Arbor, to address this Society in the near future. Seconded and carried. Dr. Griffin presented three clinical cases previous to the reading of his paper on "Exophthalmic Goitre." The discussion of the paper was opened by Dr. Marshall, followed by several other members. A recess was taken, during which time a bounteous supper was served followed by music. Vaccine Therapy was taken up and discussed by Drs. Marshall and Griffin. Meeting adjourned.

J. T. CRAMER, *Secretary pro tem.*

Regular meeting of the Muskegon-Oceana County Medical Society was held at the residence of Dr. L. W. Keyes, at Whitehall, Friday evening, October 21, 1910, at 7.30 o'clock, following dinner at the Cottage Grove Hotel. Members present: Doctors J. F. Denslow, Jacob Oosting, P. A. Quick, W. L. Griffin, C. P. Donelson, R. G. Olson, W. P. Gamber, J. M. VanderVen, J. D. Buskirk, I. M. J. Hotvedt, G. J. Hartman, Chas. F. Smith, L. W. Keyes and V. A. Chapman. Minutes of last meeting read and approved as read. Dr. Keyes reported two cases upon which he wished aid in the diagnosis. Dr. Keyes read a paper upon "Pneumonia." The discussion was opened by Dr. Griffin, followed by Doctors Hotvedt, Donelson and Gamber. Dr. Chas. F. Smith reported case of gangrene of extremities, followed at seven months by death from cerebral complications. Also a case of snakebite, which recovered.

V. A. CHAPMAN, *Secretary.*

WAYNE

On the evening of October 10, 1910, the second meeting of the Surgical Section of the Wayne County Medical Society assembled in the Society's new home to listen to a paper by Dr.

William Blodgett relative to the use of absorbable animal-membrane in the repair of ankylosed joints.

This paper, illustrative of a surgical procedure hitherto practically unemployed by the surgeons of Detroit, was replete with interest and food for future consideration.

A recently operated case with a supplementary radiograph and photographs, was displayed in evidence of the value and practicability of the operation under discussion.

Dr. Blodgett described the operation minutely, explaining how, after the bony ankylosis had been overcome by the use of mallet and chisel, and after the joint-surfaces had been rendered smooth and the joint cleaned out, the animal-membrane was carefully sutured in situ over all joint surfaces where bony opposition had previously existed.

The animal-membrane of his selection is taken from pig's bladder, is cumolized and chromized after the manner of ligature material.

To render the membrane suitably pliable for the operation, it is soaked for about five minutes in salt solution before suturing into position.

The operation was said to be applicable to all joints that are completely ankylosed but especially if such ankylosis has rendered a limb of absolute hindrance rather than of possible assistance to the patient, as was exemplified by the illustrative case presented in which the ankylosis of the knee-joint had been at right angles before operation, thus rendering the limb absolutely useless and an impediment to locomotion.

This operation, said Dr. Blodgett, is the only one which may be used with any degree of safety in ankylosis resulting from a tubercular condition.

After the operation, passive-motion, though painful, should be begun as early as the fifth or sixth day, in order to obtain the most satisfactory results.

Other and older methods were mentioned in which non-absorbable materials, such as celluloid and zinc, had been used but without much success.

That the doctor's paper was of more than ordinary interest to those present was evinced by the general and thorough discussion which it called forth.

At the general meeting of the Wayne County Medical Society, October 17, 1910, the first number on the program was an announcement by Dr. McClintock to the effect that the supposed newly discovered organism of smallpox had proved, much to his disappointment, to be an artifact.

Dr. Woodward, of the Public Health and Marine Hospital Service,—stationed in Detroit,—then presented an excellent paper disclosing the methods of that service in the handling of quarantinable diseases.

His discourse showed the measures adopted at foreign seaports, the measures adopted in our home ports, and the measures pursued when disease had already entered this country.

In illustration of the first topic he described his means of handling the emigrants when he was stationed at the Rotterdam Port, briefly, as follows:

The emigrants were met at the depots daily, and conducted to the quarantine stations, where all were given a bath, the hair was washed, and cut if necessary.

The temperature of each emigrant was then taken, the eyes examined for trachoma, the skin inspected for any eruption, the gait observed, and if aught of suspicion was detected the emigrant was detained for more thorough inspection.

All of the baggage was sterilized by steam or some other agent not destructive to it, and was then sent aboard the steamship.

The doctor then related in detail the procedure resorted to in the handling of emigrants in our American ports of entry. Every precaution is most rigidly observed, as stated above, and all suspects are held for a required period at the quarantine station.

He dealt briefly with the control of Bubonic Plague at San Francisco, stating that no case has existed there since 1908.

On Monday evening, October 24, Dr. R. S. Rowland read, before the Medical Section, a paper on "Epidemic Poliomyelitis."

The essayist contended that this disease occupies the same position in the current literature that cerebro-spinal meningitis occupied two or three years ago. The first epidemic was noticed about fifteen years ago, and its prevalence has been increasing since that time. During the past year its infectious nature has been established. It has been found that the virus is contained in the brain and spinal cord, the mucous membrane of the naso-pharynx, infected lymph nodes, salivary glands and in the acute stage in the cerebro-spinal fluid and blood. It would appear that the virus might enter through the respiratory or digestive tract, the knowledge of which has an important bearing on the prophylaxis. Its virulence is impaired by a temperature of 42 to

50 degrees C and destroyed by 1 per cent solution of hydrogen peroxide. It is conceded that one attack confers immunity. Pathologically it is now considered a vascular inflammation of the anterior horn and posterior horn of spinal cord, the white substance, and of the meninges. The medulla and pons may be involved. The various types were described. A report based upon personal interviews with physicians would indicate that since January, 1910, 130 cases have occurred in Detroit and vicinity. The majority of the cases were reported from June to October, and more females than males contracted the disease. The period of incubation is not definitely known. Diagnosis rarely made in early stages because of lack of characteristic symptoms. Suspicious early symptoms are profuse sweating, hyperesthesia of body, and pain in moving neck and back. Efficient treatment depends on early diagnosis. Since there is no specific, the treatment should be symptomatic. Try elimination by bowel, and rest, even when pain and sensitiveness do not demand it. Sedatives and analgesics are indicated in early stages of severe cases, especially those presenting delirium. Internal antiseptics are in the trial stage, although urotropin, cystogen and formin are considered of value. Nerve stimulants are never indicated. Salicylates may be found useful, as may also the application of ice to the spine. A bed frame will be found useful in second stage. Gentle massage is difficult to apply on account of pain, but may give some relief if carefully used. In the third stage two special demands are of the utmost importance, namely the prevention of deformity and the regaining of nerve and muscle power. It is necessary that suitable apparatus be employed to prevent deformity. For the nerve and muscle power, electricity, high heat, physical therapy and muscle training are indicated.

LIBRARY NOTES

The books which came from the city library and which form the nucleus of our collection are now arranged on the shelves and are being catalogued as rapidly as possible.

If you have not visited the "stack" room on the third floor, ask the librarian for the key and look it over.

There are some very valuable files of journals up there. Among them are complete sets of the London "Lancet," from 1823, of the "Journal of the American Medical Sciences," from 1821, and nearly complete sets of the "Boston Medical and

Surgical Journal," from 1829, of the "New York Medical Journal," the "Medical News," and the "Medical Record."

The Society is indebted to the publishers of a number of medical journals for free copies. The list thus far obtained includes the following: "Journal of the American Medical Association," "Therapeutic Gazette," "Archives of Internal Medicine," "International Journal of Surgery," "Military Surgeon," "Medical Review of Reviews," "Interstate Medical Journal," "Buffalo Medical Journal," "Cleveland Medical Journal," "St. Paul Medical Journal," "Physician and Surgeon," "Old Dominion Medical Journal," and the following State publications: Michigan, California and New York.

FIFTH COUNCILOR DISTRICT

The Fifth Councilor District of the Michigan State Medical Society held its annual meeting and banquet at the Hotel Pantlind, Grand Rapids, Thursday, October 20, Dr. Ralph H. Spencer presiding.

Dr. Carl A. Hamann, of Cleveland, Ohio, gave very practical remarks on "Differential Diagnosis of Certain Abdominal Affections." The leading thought was that we cannot make close differential diagnoses of these conditions,—that this can only be done, in many instances, after opening the abdomen. Many of our leading clinicians now do not attempt to make a differential diagnosis, but only locate the seat of trouble as gall bladder, uterus, ovary, appendix, etc.

Dr. Lawrence C. Grosh, of Toledo, Ohio, spoke on "Abdominal Pain." Much investigation has been made to determine the cause of abdominal pain, but we know very little as yet. Investigators have failed to find sensory nerve end organs in the mucosa of the intestine, and the visceral peritoneum is insensitive, but we have pain in these parts. A diagnosis of intra-abdominal conditions should not be made from pain, without some other contributing factors.

Dr. Victor C. Vaughan, Jr., of Detroit, spoke on "Sensitization in Tuberculosis," and told his method of testing for tuberculosis. He instills a dilute solution of Koch's T. R. in the eye under sterile conditions. A reaction means the presence of tuberculosis. No reaction means either that the patient has no tuberculosis, or is not able to form anti-bodies to resist it. He makes a second instillation of tuberculin,—more dilute,—ten days later, in the cases negative to the first instillation. A positive reaction now means that

the patient has no tuberculosis, but has been sensitized at the first treatment. A negative test is of no diagnostic value. Vaughan has used this test over fifteen hundred times with no ill effects.

Discussion was general and spirited. Dr. S. C. Graves made a worthy contribution to medical phraseology in referring to the contents of a bladder above an hour-glass contraction as "Hysterical Scared Urine."

Eighty-eight attended the banquet, Dr. Burton R. Corbus acting as toastmaster.

Dr. Long, of Ionia, gave some practical points in his toast on "Expert Witnesses." Toasts were responded to by the President and Secretary of the State Society, on organization work, and by several others. Dr. Riegerink's views of "Ideals" were interesting and encouraging.

THE DETROIT OPHTHALMOLOGICAL AND OTOLOGICAL CLUB

At the meeting, October 4, Dr. Ray Connor read a paper on the "Operation for Convergent Squint," published, together with the discussion, in this issue of the *Journal*, page 690.

DR. EUGENE SMITH.—I wish to report a case of severe perichondritis of the entire left auricle, following a furunculosis of the auditory canal. The boil had been treated locally and poultices applied for several weeks before I was consulted. Instead of the usual procedure of free opening and scraping of the cartilage, I thoroughly syringed through the sinus with antiseptic lotions, with little success, and I finally forced in through the sinus and opening at the lower margin of the meatus a quantity of Beck's bismuth paste, one part bismuth and two parts petrolatum. The discharge ceased almost at once, and the patient made a rapid recovery, with but little deformity.

GLIOMA OF THE RETINA

Last April I presented to the Club an eye removed for glioma. It can not be told by the microscopic examination which layer the glioma developed from, as it implicated the entire retina and filled the entire vitreous chamber. The nerve was stretched and cut off as far back as possible, but was evidently gliomatous, no individual nerve fibres being discernible with the microscope. Prognosis was of course bad. Patient was eighteen months old. The wound healed without complication, and remained well till April 18 (eye was removed March 10, 1910), when a "white lump" was seen in the orbit. Patient died June 16, and I show you

the "white lump," as the parents called it. It is a gliomatous mass which undoubtedly sprang from the optic nerve. It is about three by four inches in size, after hardening in alcohol several months.

Dr. Parker exhibited a case of vernal catarrh, showing the typical cobblestone appearance of the conjunctiva. Patient male, age eighteen. History of having had two previous attacks, first, lasting three months, second, six months.

The only treatment that seems to have been of any benefit is the actual cautery and excision of the hypertrophic areas.

Dr. Parker again exhibited a Schiotz tenometer, an instrument used to measure accurately the tension of the eyeball.

J. E. GLEASON, *Secretary.*

NEWS

Dr. A. W. Abbott, formerly of Ludington, has travelled extensively during the past year, and has now located permanently at 266 Putnam Ave., Detroit, Michigan.

Dr. Herbert R. Allen was married October 12th to Miss Edith L. Nye, both of Bedford, Michigan.

The State Board of Health has decided that the four children of Maurelius Jensen, a Calumet resident afflicted with leprosy, may attend the public schools without being a menace to public health. They will be kept away from their parents during the school term.

Dr. Lucius A. Farnham, of Calumet, was married in London, England, September 20, to Miss Eugenia Gray McIntosh.

Dr. A. Clarence Schoch, formerly associated with Dr. W. A. Griffith, of Coldwater, Michigan, has removed to 1039 North Clark St., Chicago, Ill., where he will resume the practice of General Surgery.

Dr. C. C. Probert, formerly of Roscommon, has removed to West Branch, where he will take up the practice of Dr. J. H. Pettis.

Students and colleagues of the late Dr. Albert B. Prescott, once Dean of the School of Pharmacy and Director of the Chemical Laboratory of the University of Michigan, propose to place a bronze

tablet in his memory in the new Chemistry Building of the University. Dr. Prescott for many years advocated before the Regents the building of a new chemical laboratory, adequate to the needs of the growing University; and although he did not live to see the realization of his plans last year it is felt that the new Chemistry Building is largely due to his efforts. Therefore, it has been considered fitting that the building should in some sense be a memorial of him, and should bear some sort of inscription dedicated to his memory.

Dr. A. M. Wilkinson, of Charlevoix, has gone to Porto Rico for three months to assist Dr. C. E. Ruth, of Ponce, in his dispensing and surgical practice.

THE USES OF SOLID CARBON DIOXIDE AND AN INSTRUMENT FOR COLLECTING AND MOULDING THE SNOW.

ANDREW P. BIDDLE, M. D., and R. A. C. WOLLENBERG, M. D., Detroit, Mich.

DISCUSSION

(Paper in November Number, page 528.)

DR. H. R. VARNEY, Detroit.—I am sure we have listened with interest to the paper and demonstration given by Dr. Biddle of this very interesting and new agent. The points I would like to take up will be brief, and only touching my own personal experience with regard to the application of this agent in some of the conditions he has mentioned. It is without doubt, when properly applied to many of the small benign growths, naevi, especially of certain depth, lupus erythematosus and lupus vulgaris, a treatment that is excelled by no other means of medication or operation in selected cases. However, when we destroy the pathological tissue, for instance, as a wart, mole, rodent ulcer, or epithelioma, and in destruction of the pathological tissues, go through into the true skin with the destruction, we must expect, as we do in applying similar destructive agents, some discomfort, some pitting, some scarring, from destruction of true skin, so that to promise our patient that there will be no scarring or traces following the application of the snow is to my mind a little bit far-reaching, and I am afraid the end result will be a slight disappointment to the patient. There is no pathological condition, such as a mole or wart, that cannot be improved or completely removed in the application of the snow, if we avoid the

healthy surrounding tissue. If one is careful this can be avoided in a great measure, and the scar shaded into the healthy skin. The personal equation enters so greatly into the destruction of tissue in different patients, that you cannot always estimate the depth of the destruction, even though the time and pressure be carefully measured, so that I feel that while the Doctor has demonstrated excellent results in epithelioma or rodent ulcer as here shown, I should look for recurrence in this character of lesion. When we think for just a moment of the condition which exists in a patient afflicted with rodent ulcer, we know that in many cases the condition is due to lowered vitality in the cell structure of the skin. This specific deviation in cell structure has often been brought about by chilling or other

external irritants. You will often get a history of freezing or frost-bite in the tip of the nose, or the cheek bones, or forehead, in early childhood or adult life, in the aged patients who present themselves with the pigmented scaly patch, ulcer, or epithelioma of the face. If such conditions are due to lowered vitality in that area affected, we should use in our application of the snow to such lesions (if it is used) in order to get more uniform and perfect healing and lessen liability to recurrence, stimulants of varying nature, after having destroyed the pathological condition. A certain percentage of these conditions will recur if stimulants are not employed to feed and stimulate the surrounding healthy cell, to reproduce and to replace the area in which you have destroyed the pathological condition.

MICHIGAN STATE BOARD OF REGISTRATION IN MEDICINE ADDITIONAL CERTIFICATES ISSUED THROUGH RECIPROCITY

		Reciprocity		Date of License
		Qual. I	Qual. II	
Strauss, David C., Lake Harbor, Mich.	Rush Med. Coll. Illinois, 1907	Illinois		8-22-10
Gordon, Joseph J., Detroit, Mich.	Med. Dept. Wooster Univ., Cleveland, Ohio, 1888		Ohio	9- 7-10
Hopper, Thomas B., Grand Rapids, Mich.	Bellevue Hosp. Med. Coll., New York, 1891	New Jersey		9-12-10
Mann, Clayton M., Half Way, Mich.	Med. Dept., Western Reserve Univ., Ohio, 1892		Ohio	9-13-10
Oden, Rudolph J. E., Cadillac, Mich.	University Med Coll., Kansas City, Mo., 1908	Iowa		9-24-10
Jamieson, John K., Paw Paw, Mich.	Bennett Med. Coll., Ill., 1900, Coll. P. & S. Univ., Ill., 1907	Illinois		9-24-10
Ayling, Gilbert H., Muskegon, Mich.	Northwestern Univ. Med. School, Chicago, Ill., 1909	Illinois		9-24-10
Davis, Charles R., Detroit, Mich.	Cornell Univ. Med. Coll., 1908	New York		10- 7-10
Hacker, Chas. W. L., Detroit, Mich.	Albany Med. Coll., N. Y., 1905	New York		10- 7-10
Bryan, Kathryn M., Wellston, Mich.	Hering Med. Coll. and Hosp., 1904	Illinois		10-27-10
Crozier, Wm. J., Kalamazoo, Mich.	Missouri Med. Coll., St. Louis, Mo., 1881		Missouri	10-27-10
Miller, Ralph F., Adrian, Mich.	Hahnemann Med. Coll., Illinois, 1909	Illinois		10-31-10

RESULTS OF OCTOBER,* 1910, EXAMINATION AT LANSING, MICH.

Bryant, Albert E.,	Newberry, Mich.,	Detroit College of Med., 1910
Daum, Ignatz I.,	Detroit, Mich.,	Med. Dept., Univ. of Paris
Grey, William E.,	Battle Creek, Mich.,	Amer. Med. Miss. Coll., 1910
James, Henry H.,	Detroit, Mich.,	Detroit Homeo. Coll., 1910
Joyce, Thomas M.,	Missoula, Mont.,	Dept. of Med. & S., U. of M., '10
Kidner, Fred'k C.,	Boston, Mass.,	Harvard Med. School, 1904
Leiman, Richard,	Detroit, Mich.,	Detroit Homeo. Coll., 1910
Meck, Henry L.,	Bucyrus, O.,	Detroit Coll. of Med., 1910
Sauermann, W. Oscar,	Battle Creek, Mich.,	Dept. M. & S., U. of M., 1893
Tryon, Geneva,	Pontiac, Mich.,	Tufts Coll. Med. School, Mass., '07
Allen, Norman, McL.,	Detroit, Mich.,	Detroit Coll. of Med., 1910
Hall, James A. J.,	Detroit, Mich.,	Dept. M. & S., U. of M., 1910

One failure, graduate of Detroit Homeopathic College, 1908.

I mention these points because I feel that with this agent we must employ other means, or we will have many recurrences with a condition far larger than when we first applied the snow. Personally I do not apply CO₂ in such condition of the aged because of the above-mentioned contraindications, but find it a most valuable and safe agent in small elevated benign growths in the young and middle-aged. No therapeutic means has been so satisfactory in the treatment of lupus erythematosus as CO₂ not only in its cure but in the appearance of the remaining scar.

DR. A. W. CRANE, Kalamazoo.—The demonstration given by Dr. Biddle is of very great value and interest.

The phase of this subject which I wish to speak of is the comparison of this method with results accomplished by the X-ray. Carbon dioxide snow is a destructive agent. It does what an operation would do, as I understand it. It destroys the pathological lesion and a certain amount of tissue, and recovery occurs as a process of healing, with the pathological tissue in place. If it be possible that there are some products absorbed into the system producing a reaction of immunity, then and then only would it rival the X-ray. The X-ray treatment of a skin lesion is in the long run a blood reaction. It is not essentially a process of local destruction. The skin lesion will heal in some cases even without local inflammation. In a case of lupus, for instance, if the blood be examined for the opsonic index, after every X-ray treatment the index will be found to rise just as though a vaccine of tubercular substance were injected. In some way or other, by the use of the X-ray, we have introduced a vaccine into the circulation. It is not necessary to treat the whole surface in lupus in order to get healing of the whole surface. In tuberculosis of the glands of the neck, it is not necessary to treat all the glands of the neck in order that all may disappear. In other words, we achieve blood immunity and a true cure, and not simple destruction of tissue. In this respect I have my doubts if the carbon dioxide treatment can rival the X-ray as a mode of cure.

DR. M. L. HOLM, Lansing.—I would like to mention a certain case which was treated with both X-ray and carbon dioxide snow. The patient was a man about thirty years of age. The lesion involved the skin over the upper part of the nose, and was spreading quite rapidly. A diagnosis of lupus had been made. The man had been treated for nearly three months with the

X-ray without any apparent improvement. He was referred to Dr. Biddle about three weeks ago, who has treated him, using carbon dioxide snow. At the present time the lesion is practically healed, and I have never seen the case look better since the disease first started, over a year since.

While no conclusions should be drawn as to the value of a given treatment from a single instance, and we are unable to say whether or not in this case there will be a recurrence, the lesion certainly looks well, and illustrates that at least in some cases as satisfactory clinical results may be obtained with carbon dioxide snow as by the use of the X-ray.

DR. F. W. ROBBINS, Detroit.—I simply rise to say that we must not take too much into account the fact that the tissue has been destroyed. Those who have had experience in the removal of epitheliomata by the application of caustic paste, before anything was known of carbonic snow or the X-ray, remember that the resulting cicatricial scar is very small compared with the size of growth removed, practically no deforming scar resulting from removal of growth an inch in diameter.

DR. BIDDLE, in closing the discussion, said:—I wish to state emphatically that the use of the carbon dioxide snow, in the cases cited, is not suggested as a cure-all. But those of you who have, for instance, watched the development of the X-ray as a therapeutic agent know that its use, in diseases of the skin at least, is limited to selected cases, and that its general use has been disappointing. Besides, the apparatus is costly and its working should, admittedly, be confined to the expert.

We all know that some of the uses for which the carbon dioxide snow has been advised can be done better by surgery; but we also know that many of our patients will not submit to the knife. And so we, the writers, have simply presented to you a method within reach of you all which, to our mind, from clinical experiences, offers a solution of the problem of dealing with this class of skin lesions. The possibility of recurrence is the same here as with other methods.

We know as well as any one of you the possibility of a recurrence of the epithelioma in the woman here presented. All we claim is that we can get as good a clinical result in very much less time than by the use of the X-ray, in a patient who refuses to submit to the knife. In regard to the scar, it is not more disfiguring than obtained after other means, and in most instances is insignificant.

All any one of us can expect in a case of lupus erythematosus or lupus vulgaris is an apparently clinical cure, but we can get here as good clinical results with less amount of destruction of tissue, less danger, and in less time, than we can with the use of the X-ray. Of course the technique is developed by experience, and its perfection depends on the individual.

To remove warts, in the treatment of folliculitis and pus-infected areas, the carbon dioxide snow is ideal.

THE DIFFERENTIAL DIAGNOSIS OF ORGANIC AND FUNCTIONAL DISEASES OF THE STOMACH

JAMES E. DAVIS, M. D., Detroit, Mich.

DISCUSSION

(Paper in November Number, page 543.)

DR. BENJ. A. SHEPARD, Plainwell.—I heartily agree with what Dr. Davis said with regard to the ages of the patients afflicted with gastric troubles. I also concur with him in regard to the class of people who are afflicted with gastric disturbances from a nervous origin. I think we often find it among those doing intellectual work, especially students and the higher intellectual pursuits.

A case comes to my mind of a young lady about to finish her course in high school, a rather nervous person, very conscientious in her work. She was out riding one day, and a team ran away, catching the sleigh in which she was riding. It did not injure her but simply jarred her. Right immediately following, this young lady began to have gastric trouble, deficient secretions, and so forth, and my diagnosis was a neurotic inhibition of the secretions. I told the family that I thought I could do nothing until school was out; in fact I did nothing except prescribe as much rest as possible, and immediately after school was out a recovery took place, simply showing a neurotic tendency.

As to the hydrochloric acid test indicating ulcer, I would disagree with the speaker. It seems to me that it does not indicate ulcer in the majority of cases. It seems to me that it indicates, if anything, motor insufficiency—simply a collection of hydrochloric acid in excess. As to the method of testing motor activity, of course the ideal way, the natural and absolutely accurate way, is the stomach tube, removing the meal. The next most accurate test, I think, is to ascertain the length of time between the ingestion of salol and its occurrence in the urine. That seems to me to be more accurate than trying to find when it will disappear in the urine.

DR. JOHN T. WATKINS, Detroit.—There are two things I would like to call attention to that I do not think Dr. Davis mentioned. We are all conscious of the fact that functional diseases of the stomach are being gradually lessened in number, and we are finding a more definite pathological basis for them. In the last few years there have been a great many functional diseases of the stomach that have been cleared up by the finding of gall stones, or chronic appendicitis, or perhaps a chronic cholecystitis, and in those cases it hardly seems to me that we can attribute the stomach symptoms to the nervous system. It strikes me that 66% of all is a little too high for functional diseases of the stomach, but I may have misunderstood Dr. Davis on that point.

There was a statement made that the early history of cancer was often very similar to that of ulcer. I believe that is usually for a very short time only, because cancer, as a rule, advances with considerable rapidity, and the location of it may obscure the symptoms for some time. If we have a cancer that is anywhere near the pylorus I think the symptoms will develop very early, such as anaemia, loss of appetite, and that sort of thing.

Dr. Shepard mentions the point that the hydrochloric acid might be increased in cancer with retention. The fact is that the hydrochloric acid is more than apt to be reduced when there is motor insufficiency. With evidence of stagnation we practically always find a reduction of hydrochloric acid.

DR. J. G. R. MANWARING, Flint.—I would like to emphasize a point brought out by the last speaker, and I do so by saying that functional diseases are simply diseases in which the patient is possessed of a devil. A few hundred years ago practically all diseases were functional, because we did not know their true cause. All patients were possessed of devils, and since then we have been casting them out, so that at the present time we consider that there are few so possessed. I think 60% a little high, although some famous surgeons give that, and we know they are apt to call stomach conditions organic if there is a chance.

The statement has been made and not approved of, that the hypersecretion of hydrochloric acid is evidence of ulcer. I think with a little modification this is true, that is, recurring attacks of marked hyperchlorhydria are always due, practically, to ulcer.

The question of malignancy has also been brought up in ulcer cases. A malignant develop-

ment in ulcer of the duodenum is very rare. A development of malignancy in ulcer of the stomach is not so rare. You can usually diagnose ulcer of the duodenum and assure the patient that the probabilities are that he never will have cancer there. You cannot so assure him if the trouble is in front of the pylorus.

The physiology of the gastro-intestinal tract is advancing materially now, and that conditions far removed from the stomach would seem to give us symptoms directly pertaining to that organ, as has just been mentioned, is a very important thing, and it seems to me we will find more of these cases to be traced to distant conditions. I recall now a particular case of "achylia gastrica nervosa," which was very interesting to me. I was finally persuaded to explore the man, and removed a gall bladder full of stones, with a cure. He never had a symptom that I could trace to the gall bladder directly.

DR. DAVIS (in closing the discussion).—As to functional diseases, one might well question the high percentage of cases I mentioned in the paper, but it seems to me that rather than face the fact that we are apt to find fewer functional cases in the future than we have been finding, I think we will find the condition of society at the present time is such as to develop more neurasthenic diseases, and notwithstanding the fact that our methods of diagnosis will perhaps be more accurate and we will be able to diagnose some functional cases as truly belonging to organic classes, however, I think the gain will be on the side of functional diseases. As to picking out any one symptom, and relying on the differential diagnosis, from one symptom, we would certainly be in error. We cannot rely upon the mere presence of hydrochloric acid, or any other one symptom.

In the early diagnosis of cancer we have a difficult problem before us. In ulcer we have a difficult diagnosis before us, in perhaps all of the border line cases. It is only by grouping all the symptoms and then forming our conclusions that we will be able to make a correct diagnosis.

AN ORDINANCE TO PROVIDE FOR A MILK COMMISSION AND FOR THE SALE OF CERTIFIED MILK WITHIN THE CITY OF LANSING, AND TO ESTABLISH RULES, REGULATIONS AND PENALTIES IN RELATION THERETO

Be it ordained by the Common Council of the City of Lansing:

SECTION I. That within thirty days after the passage of this ordinance, it shall be the duty of

the mayor to appoint five physicians of the City of Lansing duly authorized to practise medicine under the laws of this State, upon the recommendation of the Physicians Clinical club of Lansing, as milk commissioners for the City of Lansing, who shall each hold his office for two years and until his successor is appointed and qualified, who collectively shall be known as the "Lansing Medical Milk Commission." It shall be the duty of this Commission to supervise the production of milk intended for sick-room purposes, infant feeding, and for use in hospitals within said City of Lansing.

SECTION II. Such Commission upon appointment shall each take and subscribe the constitutional oath required of all appointive officers of said city and file the same with the city clerk. Such milk commissioners shall have authority to organize themselves into a board for the purpose of carrying out the intention of this ordinance, and to that end shall have the power from time to time to make, alter and amend by-laws, rules and regulations (not inconsistent with the Constitution and Laws of the United States and of the State of Michigan), fixing or altering the number of its medical directors and managers, and to do such other thing or things as shall in their judgment tend to promote or advance any purpose or purposes of such Commission, and to prescribe their respective duties; and for the regulating of the conditions under which milk shall be produced by any dairyman or dairymen, sold within such city as certified milk. Such Milk Commission shall have power to certify to any milk produced under their supervision which shall meet the requirements hereinafter mentioned.

SECTION III. The members of such Medical Milk Commission shall perform their services without pay, and no member thereof shall receive directly or indirectly from any dairyman or dairymen, producing milk which is to be sold in said city as certified milk, any commission, salary, emolument or any compensation of any kind or character for any services rendered under the provisions of this ordinance, or for anything whatever in connection with his duty as a member of said Commission.

SECTION IV. Every such Commission shall have power to enter into an agreement in writing with any dairyman or dairymen for the production of milk under the supervision of such Commission for the purposes enumerated in Section I hereof, and to prescribe in such agreement the conditions under which milk shall be produced, which conditions, however, shall not be below the standard of purity and quality for "Certified Milk" as fixed by the "American Association of Medical Milk Commissions," and the standards for milk now fixed or that may hereafter be fixed by any law of the United States or the law of the State of Michigan. In any agreement so entered into by any such Commission with any dairyman or dairymen on behalf of said Commission, it may be provided that such Milk Commission may designate any analysts, chemists, bacteriologists, veterinarians, medical inspectors, or other persons who in its judgment may be necessary for the proper carrying out of the purposes of such Commission, for employment by such dairy-

man or dairymen, and to prescribe and to define their powers and duties, and that such persons so employed by such dairyman or dairymen may be discharged from employment whenever such Medical Milk Commission may request such discharge or removal in writing, provided that no such agreement shall become operative until the same has been reported to the Common Council of the City of Lansing and duly approved by resolution of said council. Provided further, that no liability of said City of Lansing shall be incurred to any person or persons in consequence of such agreement.

SECTION V. Any dairyman or dairymen who may be willing to comply with the requirements provided by said Commission shall be entitled to have his milk certified by said commissioners, but not otherwise, and any such dairyman or dairymen who may have entered into an agreement with said Commission to furnish certified milk as aforesaid shall, upon the prescription of any practising physician of the City of Lansing, furnish promptly and without delay the amount of certified milk so prescribed to any person or persons in said City holding such prescription, at the price which may from time to time be fixed by said Commission. Provided further, that nothing herein contained shall prohibit the sale of such certified milk by such dairyman or dairymen to any person or persons within the City of Lansing and for a less price than that provided by said Commission.

SECTION VI. All containers of any kind or character used in the carrying or distribution of milk produced by any dairyman or dairymen under contract with such Milk Commission, shall have attached thereto or placed thereon a certificate or seal bearing the name of the "Medical Milk Commission" of the City of Lansing with which such dairyman or dairymen producing such milk shall be under contract, which certificate shall have printed, stamped or written thereon the day or date of the production of the milk contained in any such container and the words "Certified Milk" in plain and legible form.

SECTION VII. The work and methods of such Milk Commission and dairies upon which milk is produced under contract with such Commission, shall at all times be subject to investigation by the Board of Health of the City of Lansing and the Board of Health of the State of Michigan.

SECTION VIII. No person, firm or corporation shall sell or exchange or offer or expose for sale or exchange as and for certified milk, any milk which is not produced in conformity with the methods and regulations prescribed by said Milk Commission and which does not bear the certification of such Milk Commission for the purposes specified in Section I hereof, and which is not produced in conformity with the methods and regulations for the production of certified milk from time to time adopted by the American Association of Medical Milk Commissions or any laws of the State of Michigan or rules and regulations adopted in pursuance of any laws of such State, and any such person or persons violating the provisions of this ordinance shall be subject

to forfeit and pay to the City of Lansing \$100 to be recovered in an action of debt in addition to a penalty prescribed in Section IX.

SECTION IX. Any person or persons violating any of the provisions of this ordinance, shall, upon conviction thereof, be punished by a fine not exceeding \$100, and in default of the payment thereof such person shall be imprisoned in the city penitentiary until such fine is paid, not exceeding the term of ninety days.

BOOK NOTICES

Pediatrics. Volume VII, of the Practical Medicine Series of 1910. Edited by Isaac A. Abt, M. D., Clinical Professor of Pediatrics, Northwestern University Medical School, with the Collaboration of May Michael, M. D., Orthopedic Surgery, edited by John Riddlon, A. M., M. D., Professor of Orthopedic Surgery, Rush Medical College, with the Collaboration of Charles A. Parker, M. D.

Volume VII of "The Practical Medicine Series," devoted to pediatrics and orthopedic surgery, in every way proclaims and maintains the reputation established by the six preceding volumes. As in the other volumes, this one treats of that which is new in the field it covers and gives references. Some space is given to experiences of C. K. Millard in feeding infants with "dried milk." (A continuous stream of fresh milk is fed on revolving cylinders heated to 250 degrees Far. The resultant powder in air-tight packages will keep almost indefinitely.) This preparation has been used for eighteen months with very satisfactory results. Practical suggestions in pediatrics abound in this book, both for infant and invalid feeding.

In cerebro-spinal meningitis recent experience with lumbar puncture and the injection of Flexner's Serum is given, as is also indications and technic for lateral ventricular puncture through the anterior fontanell or incision in the skull. The last sixty or seventy pages are devoted to orthopedic surgery.

A Treatise on Orthopedic Surgery by Royal Whitman, M. D., Assistant Professor of Orthopedic Surgery in the College of Physicians and Surgeons of Columbia University, New York; Professor of Orthopedic Surgery in the New York Polyclinic Medical School and Hospital; Associate Surgeon to the hospital for ruptured and crippled, etc. Fourth edition, revised and enlarged. Illustrated with six hundred and one engravings. Lea & Febiger, Philadelphia and New York.

The fourth edition of "Whitman's Orthopedic Surgery" is just off the press. This edition is thoroughly revised and considerably enlarged. The etiological grouping of deformities under tuberculosis, syphilis, injuries, rachitis and the numerous subdivisions, assist greatly to our understanding of these conditions. In the devices for treating deformities, such as apparatus,

exercise, manipulations, etc., the author has shown a wonderful fertility of invention and resource. The exercises for lateral curvature of the spine and appliances used in correction of these deformities are plainly illustrated and lucidly described, as also are those for other deformities of the body. The operative measures receive full attention both in the text and illustrations. The Lorenz bloodless operations are fully described and shown, nor is the after-treatment neglected. The malign effect of the popular shoe of to-day is well and clearly shown, as producing the pedal deformities so common among our people. Deformities due to the nervous system, paralysis, etc., are treated with the same clearness and precision that marks the entire work and lends the charm of individuality that makes the reading at once instructive and pleasurable.

An Epitome of Hygiene and Public Health. By George M. Price, M. D., formerly inspector New York State Tenement Commission, Medical Sanitary Inspector, New York Department of Health. 12mo. 255 pages. Cloth, \$1.00, net. Lea & Febiger, Publishers, Philadelphia and New York, 1910.

This is another of the Pederson Medical Epitome Series, printed and bound in the well-known style, and is a concise presentation of the subject of Hygiene and Public Health, giving the facts in a nut-shell. A series of questions follows each chapter, for the convenience of the student.

It is too brief for a careful study of the subject, but a valuable reminder in reviewing a subject already studied, in which capacity the student and general practitioner will find it useful.

Applied Anatomy. The construction of the Human Body considered in Relation to its functions, diseases and injuries. By Gwilym G. Davis, Associate Professor of Applied Anatomy, University of Pennsylvania. With Six Hundred and Thirty Illustrations, mostly from original dissections and many in color, by Erwin E. Faber, 1910. Philadelphia and London. J. B. Lippincott Company. Net \$6.00.

Dr. Davis teaches Anatomy in this book in its relations to normal and pathological conditions, and mentions plain anatomical facts only so far as necessary to correlate and unify them in their relation to functional or regional conditions. The drawings are mostly original, are works of art as well as accuracy, and show the relations excellently. The colorings are a great aid in the use of the illustrations.

Under the heading "The Abdomen," for instance, shadow drawings are given showing relation of the various viscera to the exterior markings, and regions. The muscles with the directions of their fibers are shown, with the distribution of veins, arteries and nerves. The

various incisions are indicated in another drawing, with the bony outlines shown in shadow as a guide.

Under each region of the body, after considering the anatomical conditions and relations, the chief operations affecting that region are discussed, showing the relation of the operation to the anatomical arrangement. These operations are often illustrated, showing steps in operations, and the relations.

We have no hesitancy in recommending this book.

Progressive Medicine. A quarterly digest of advances, discoveries and improvements in the medical and surgical sciences. Edited by Hobart Amory Hare, M. D., assisted by Leighton F. Appleman, M. D. September 1, 1910. Lea & Febiger, Philadelphia and New York. \$6.00 per annum.

This number of "Progressive Medicine" contains the latest work upon "Diseases of the Thorax and its Viscera," edited by Wm. Ewart; "Obstetrics," by Edward P. Davis; "Dermatology and Syphilis," by William S. Gottheil; "Diseases of the Nervous System," by Wm. G. Spiller.

These monographs are exhaustive studies in their field, and bring together in a form easily used the mass of investigations that has been reported in the last twelve months.

Materia Medica and Therapeutics for Nurses. John Foote, M. D. Assistant Professor of Therapeutics and Materia Medica, Georgetown University School of Medicine. Philadelphia and London. J. B. Lippincott Company. 1910.

Dr. Foote has limited the number of drugs studied, has briefly stated the forms, physiological action, and therapeutic action of them, together with a study of the poisonous effects, and antidotes.

Details and minutiae are not at all considered. After each chapter is a list of questions pertaining to the subject matter just considered. The last half of the book is devoted to an alphabetical list of commonly used drugs, with their physical properties, uses and doses. The book is written in a style not at all "over the heads" of the average novitiate in the study of nursing, and should prove very useful in such teaching.

Preparatory to, and following, operations upon the brain or spinal cord hexamethylenamine ("urotrophin") should be administered in liberal doses; Crowe has shown that formaldehyde then appears in the cerebrospinal fluid, and thereby minimizes the danger of infection.—*American Journal of Surgery*.

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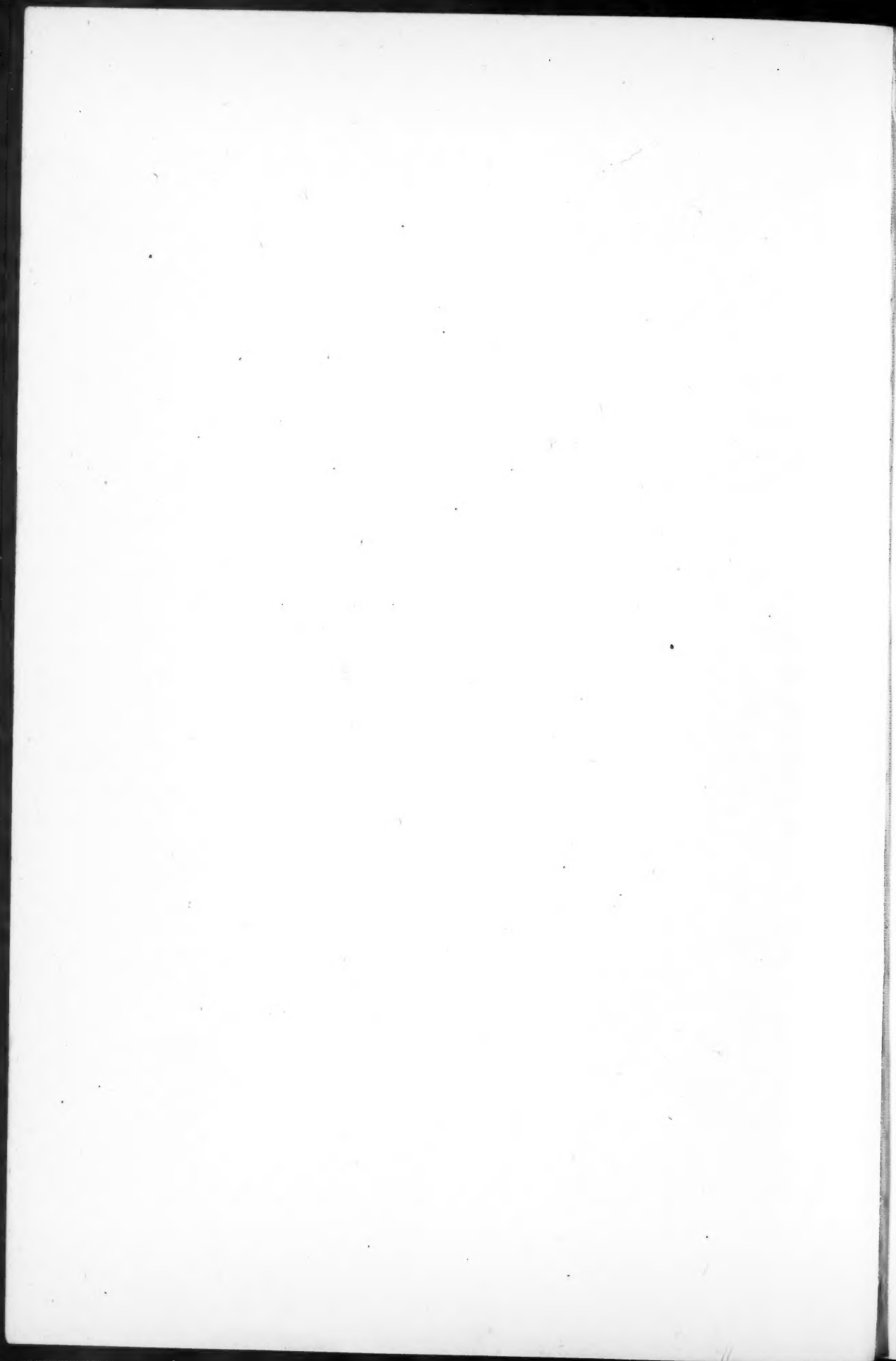
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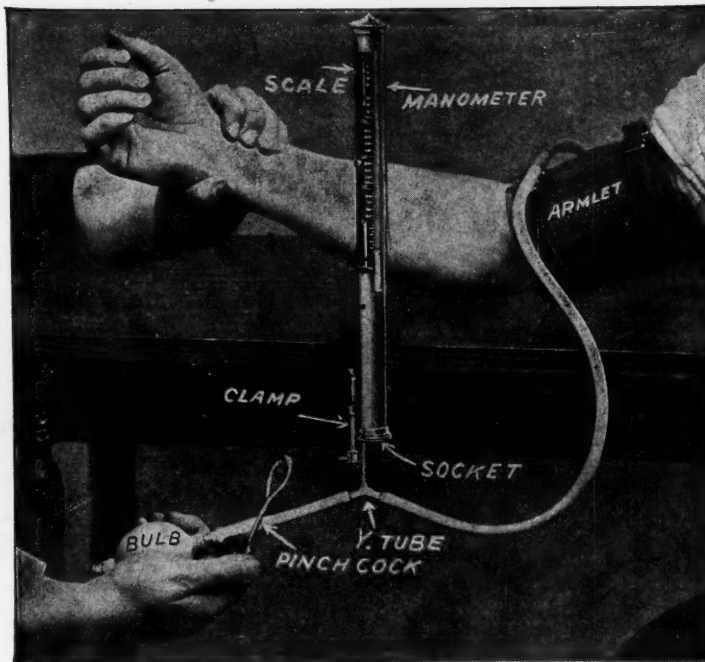
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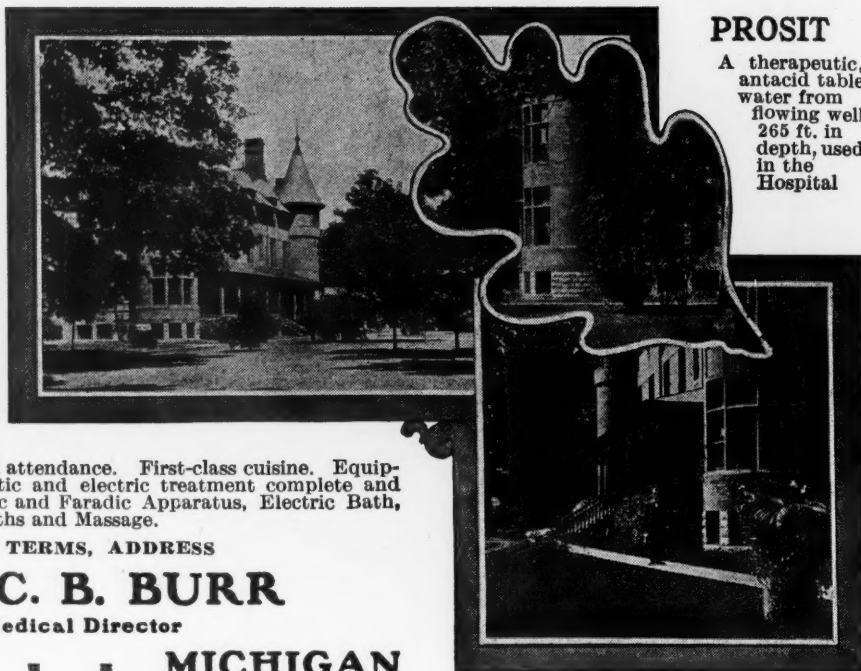
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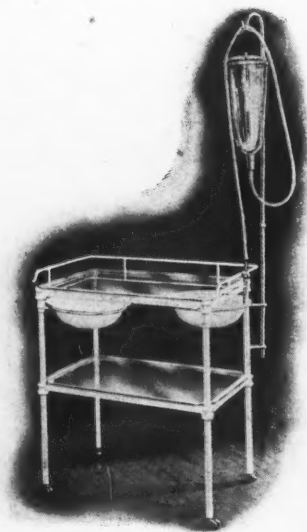
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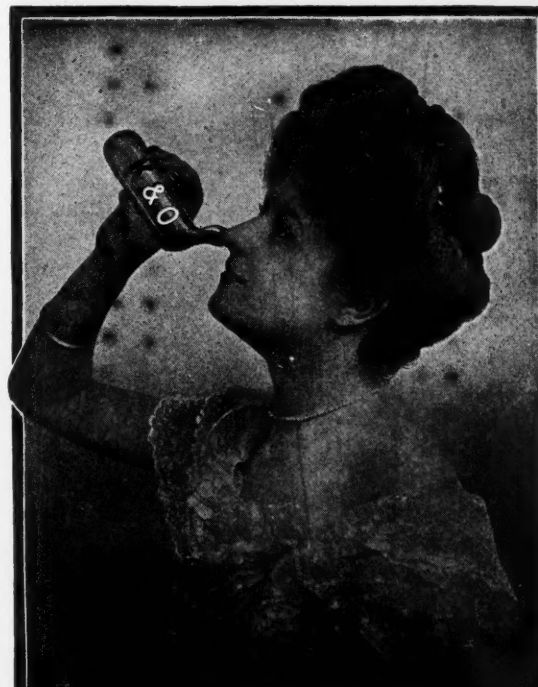
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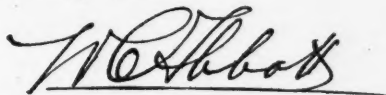
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